Video Cassette Recorder Deck : Turbo Drive Nora N1 N2 N3 N4 N5

Service
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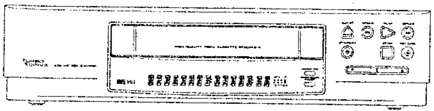

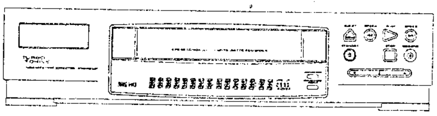

Service Manual

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Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

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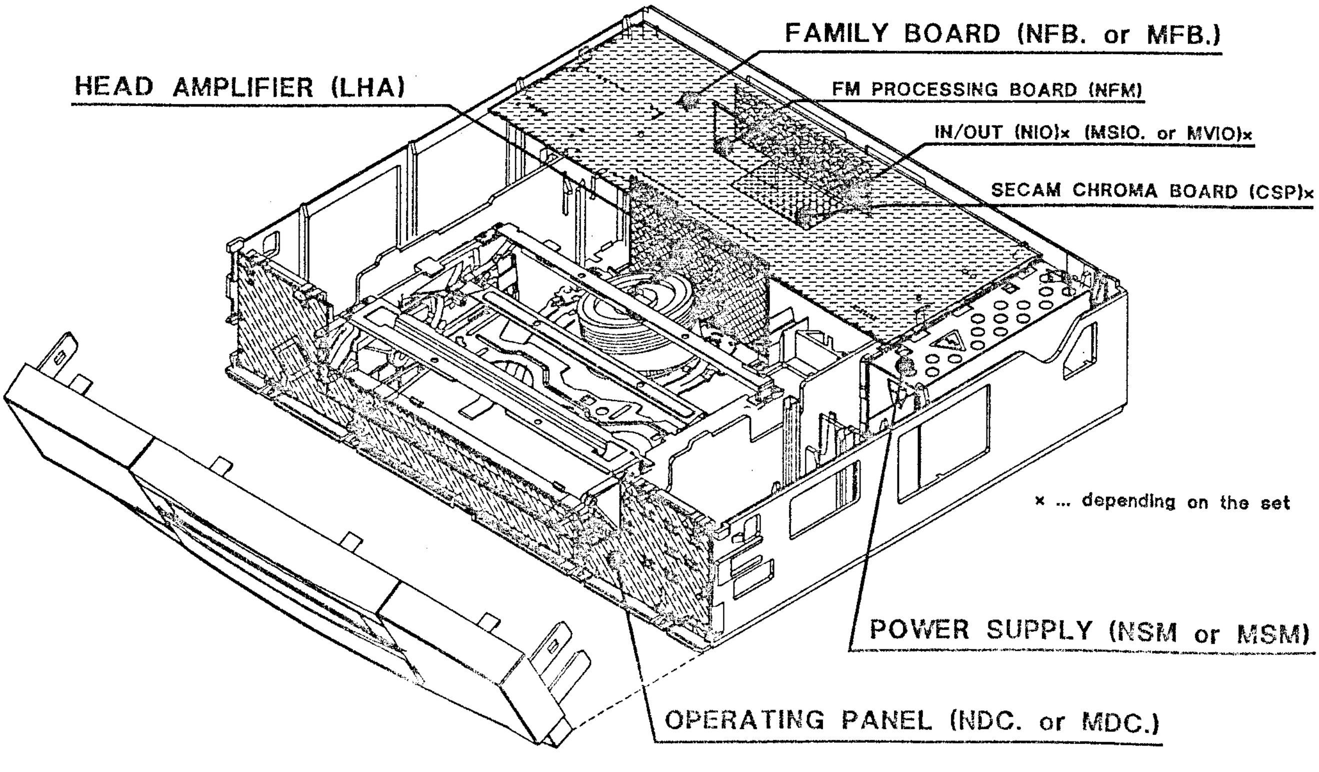
FEATURES

	PAL B/G	PAL B/G & SECAM L	SECAM L	PLL tuning system	2 Videoheads	3 Videoheads	4 Videoheads	VPS	LCD-Remote	Teletext / VPT	Audio dubbing	Studio picture control	Show View / Video Plus	Video Longplay	16:9 switching	Follow TV	Synchroedit	Real time download	Title recording	VISS	6 Timer blocks	2 Scart connectors
N3																						
VR241/02	•			•	•			•												•	•	•
VR241/10	•			•	•															•	•	•
VR242/02	•			•	•			•	•											•	•	•
VR247/01	•			•	•				•				•							•	•	•
VR247/02	•			•	•			•	•				•							•	•	•
VR247/06		•		•	•			•	•				•							•	•	•
VR347/02	•			•		•		•	•				•							•	•	•
VR347/10	•			•		•			•				•							•	•	•
VR2410/19			•	•	•															•	•	•
VR2419/39		•		•	•															•	•	•
VR2469/39		•		•	•								•							•	•	•
VR3419/39		•		•		•														•	•	•
VR3469/39		•		•		•							•							•	•	•
VR3479/39		•		•		•			•				•							•	•	•
2SB41/11	•			•	•				•											•	•	•
2SB410/18			•	•	•															•	•	•
2SB419/38		•		•	•															•	•	•
2SB469/38		•		•	•								•							•	•	•
3SB419/38		•		•		•														•	•	•
3SB469/38		•		•		•							•							•	•	•
3SB47/11	•			•		•			•				•							•	•	•
24DV10/19			•	•	•															•	•	•
N4																						
VR447/02	•			•			•	•	•		•	•	•	•	•	•	•	•	•	•	•	•
VR4469/39		•		•			•				•	•	•	•	•	•	•	•	•	•	•	•
VR4479/39		•		•			•		•		•	•	•	•	•	•	•	•	•	•	•	•
N5																						
VR243/01	•			•	•			•	•	•										•	•	•
VR243/13	•			•	•			•	•	•										•	•	•

SURVEY OF SETS

	N1	N2	N3	N4	N5
VR241/02/10			♦		
VR242/02			♦		
VR243/01/13					♦
VR247/01/02/06			♦		
VR347/02/10			♦		
VR2410/19			♦		
VR2419/39			♦		
VR3419/39			♦		
VR3479/39			♦		
VR2469/39			♦		
VR3469/39			♦		
VR447/02				♦	
VR4469/39				♦	
VR4479/39				♦	
2SB41/11			♦		
2SB410/18			♦		
2SB419/38			♦		
2SB469/38			♦		
3SB419/38			♦		
3SB469/38			♦		
3SB47/11			♦		
24DV10/19			♦		


FAMILY BOARD (NFB. or MFB.)
HEAD AMPLIFIER (LHA)
FM PROCESSING BOARD (NFM)
IN/OUT (NIO)× (MSIO. or MVIO)×
SECAM CHROMA BOARD (CSP)×
POWER SUPPLY (NSM or MSM)
OPERATING PANEL (NDC. or MDC.)

× ... depending on the set

SURVEY OF SETS AND PCB'S

	POWER SUPPLY	**OPERATING PANEL**				**FAMILY BOARD** - VS-Videoprocessing - IO-Input/Output - FV-Frontend - AL-Audio linear								**SECAM L BOARD**	**IN/OUT BOARD**	**IN/OUT, VPS BOARD**	**IN/OUT, TXT BOARD**	**IN/OUT, VPS BOARD**	**IN/OUT BOARD**	**FM BOARD**	**HEAD AMPLIFIER**			**TAPE DECK**		
	MSM,NSM	NDCP2/UG	MDCP3/VPT	NDCB1/UG	NDCP4/UBG	NFB3/2GV	NFB3/2G	NFB3/2GL	NFB3/2GLV	MFB2T/2L	MFB3T/2GV	NFB4/4FG	NFB4/4FGVLP	CSP	MSIO	MSIO/VPS	MVIO	NIO/VF	NIO/F	NFM	LHA2/0	LHA3/0	LHA4/0	DM2/0	DM3/0	DM4/0
N3																										
VR241/02	•	•				•										•					•			•		
VR241/10	•	•					•								•						•			•		
VR242/02	•	•				•										•					•			•		
VR247/01	•	•					•								•						•			•		
VR247/02	•	•				•										•					•			•		
VR247/06	•	•							•					•		•					•			•		
VR347/02	•	•				•										•						•			•	
VR347/10	•	•					•								•							•			•	
VR2410/19	•	•								•				•	•						•			•		
VR2419/39	•	•						•						•	•						•			•		
VR2469/39	•	•						•						•	•						•			•		
VR3419/39	•	•						•						•	•							•			•	
VR3469/39	•	•						•						•	•							•			•	
VR3479/39	•	•						•						•	•							•			•	
2SB41/11	•			•			•								•						•			•		
2SB410/18	•			•						•				•	•						•			•		
2SB419/38	•			•				•						•	•						•			•		
2SB469/38	•			•				•						•	•						•			•		
3SB419/38	•			•				•						•	•							•			•	
3SB469/38	•			•				•						•	•							•			•	
3SB47/11	•			•			•								•							•			•	
24DV10/19	•			•						•				•	•						•			•		
N4																										
VR447/02	•				•								•					•		•			•			•
VR4469/39	•				•							•		•					•	•			•			•
VR4479/39	•				•							•		•					•	•			•			•
N5																										
VR243/01	•		•								•						•				•			•		
VR243/13	•		•								•						•				•			•		

MFB1T/..	VST-Tuning, 1 Scart	FAMILY BOARD **N1** **N2**
NFB1/..	VST-Tuning, 1 Scart	
NFB2/..	PLL-Tuning, 1 Scart	
NFBE/..	ECO, VST-Tuning, 1 Scart	
NFBC/..	ECO, PLL-Tuning, 1 Scart	
MFB2T/..	PLL-Tuning, 2 Scart	FAMILY BOARD **N3** **N5**
MFB3T/..	PLL-Tuning, 2 Scart, TXT	
NFB3/..	PLL-Tuning, 2 Scart	
NFBO/..	ECO, PLL-Tuning, 2 Scart	
NFB4/..	PLL-Tuning, 2 Scart, Audio dub.	FAMILY BOARD **N4**

GB TECHNICAL DATA	D TECHNISCHE DATEN	F CARACTERISTIQUES	
Mains voltage	Netzspannung	Tension secteur	180 - 240 V
Mains frequency	Netzfrequenz	Fréquence	45 - 65 Hz
Power consumption	Leistungsaufnahme	Puissance absorbée	15 W
Ambient temperature	Raumtemperatur	Température ambiante	+10°C - +35°C
Relative humidity	Relative Luftfeuchtigkeit	Humidité relative	20 - 80%
Dimensions	Abmessungen	Encombrement	380 x 86 x 338 mm
Weight	Gewicht	Poids	~ 4,6 kg
Fast forward/rewind time	Vor-/Rückspulzeit	Temps (re-)bobinage	typ. 95s (260s ECU) E180 cass.
Position of use	Betriebslage	Position d'emploi	horizontally, max 15°
Video-resolution	Video-Auflösung	Puissance absorbée	>234 lines
Audio	Audio	Audio SP :	80Hz - 10kHz (≤8dB)
		LP :	80Hz - 5kHz (≤8dB)

NL TECHNISCHE GEGEVENS	E DATOS TECNICOS	I DATI TECNICI	
Netspanning	Tensión de red	Tensione di alimentazione	180 - 240 V
Netfrequentie	Frecuencia de red	Frequenza di rete	45 - 65 Hz
Opgenomen vermogen	Consumo de potencia	Potenza assorbita	15 W
Omgevingstemperatuur	Temperatura ambiente	Temperatura ambiente	+10°C - +35°C
Relatieve vochtigheid	Humedad relativa	Umidità relativa	20 - 80%
Afmetingen	Dimensiones	Dimensioni	380 x 86 x 338 mm
Gewicht	Peso	Peso	~ 4,6 kg
Vooruit/terugspoeltijd	tiempo de (re-)bobinado	Tempo di (ri-)avvolgimento	typ. 95s (260s ECU) E180 cass.
Gebruikspositie	Posición de uso	Posizione di funzionamento	horizontally, max 15°
Oplossend vermogen	Resolución video	Risoluzione video	>234 lines
Audio	Audio	Audio SP :	80Hz - 10kHz (≤8dB)
		LP :	80Hz - 5kHz (≤8dB)

GB SAFETY INSTRUCTIONS

- Safety regulations demand that the set be restored to its original condition and that components identical with the original types be used.
  Safety components are marked by the symbol ⚠
- All IC s and many other semi- conductors are susceptible to electrostatic discharges(ESD). Careless handling during repair may reduce life drastically. When repairing, make sure that you are conneted with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools on the same potential.
- A set to be repaired should always be connected to the mains via a suitable isolating transformer.
- Never replace any modules or any other parts while the set is switched on.
- Use plastic instead of metal alignment tools. This in order to prelude short-circuit or to prevent a specific circuit from being rendered unstable.

REMARKS

- The direct voltages and oscillograms ought to be measured relative to the set mass.
- The direct voltages and oscillograms mentioned in the diagrams ought to be measured with a colour bar signal and the picture carrier at 503.25 MHz (C25).
- The oscillograms and direct voltages have been measured in RECORD or PLAY mode.
- The semiconductors, which are mentioned in the circuit diagram and in the parts lists, are fully exchangeable per position with the semiconductors in the set, irrespective of the type designation of these semiconductors.

D SICHERHEITSHINWEISE

- Die Sicherheitsvorschriften erfordern es, daß sich das Gerät nach der Reparatur in seinem originalen Zustand befindet und daß die zur Reparatur benutzten Ersatzteile mit den OriginalErsatzteilen identisch sind.
  Sicherheits-Bauteile sind mit der Markierung versehen ⚠ .
- Alle IC's und Halbleiter sind empfindlich gegen elektrostatische Entladungen (ESD). Unvorschriftmässige Behandlung von Halbleitern im Reparaturfall, kann zur Zerstörung dieser Bauteile oder zu einer drastischen Reduzierung der Lebensdauer führen. Sorgen Sie dafür, dass Sie sich im Reparaturfall über ein Armband mit Widerstand auf dem gleichen Potential, wie die Masse des Gerätes befinden. Alle Bauteile, Werkzeuge und Hilfsmittel sind auf das gleiche Potential zu legen.
- Ein zu reparierendes Gerät ist immer über einen Trenntransformator an die Netzspannung anzuschliessen.
- Bei eingeschaltetem Gerät dürfen keine Module oder sonstige Einzelteile ausgetauscht werden.
- Zum Abgleich sind ausschliesslich Kunststoffwerkzeuge zu benutzen (keine Metallwerkzeuge verwenden). Dadurch wird vermieden, dass ein Kurzschluß entstehen kann oder eine Schaltung instabil wird.

ANMERKUNGEN

- Die Gleichspannungen und Oszillogramme sind gegen Gerätemasse zu messen.
- Die Gleichspannungen und Oszillogramme angeführt in den Schaltbildern sollen unter folgenden Bedingungen gemessen werden: Farbbalkensignal, Bildträger auf 503.25 MHz (C25)
- Die Oszillogramme und Gleichspannungen sind in RECORD oder PLAY gemessen.
- Die in den Stücklisten aufgeführten Bauteile sind positionsweise voll auswechselbar gegen die Bauteile in dem Gerät, ungeachtet der etwaigen Typenbezeichnungen.

F AVERTISSEMENTS

- Les normes de sécurité exigent qu'aprés réparation l'appareil soit remis dans son état d'origine et que soient utilisées les piéces de rechange identiques à celles spécifiées.
  Les composants de sécurité sont marqués ⚠
- Tout les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharger statiques (ESD). Leur longévité pourrait étre considérablement écourté par le fait qu'aucune précaution n'est prise à leur manipulation. Lors de réparations s'assurer de bien étre relié au méme potential que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité. Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.
- Toujours alimenter un appareil à réparer à travers un transfo d'isolement.
- Ne jamais remplacer les modules ni d'autres composants quand l'appareil est sous tension.
- Pour l'ajustage, utiliser des outils en plastique au lieu d'instruments métalliques. Ceci afin d'éviter les court - circuits et exclure l'instabilité dans certains circuits.

OBSERVATIONS

- La mésure des tensions continues et des oscillogrammes doit se faire par rapport à la terre de l'appareil.
- La mésure des tensions continues et des oscillogrammes figurant sur le schéma doit se faire dans un signal de barre couleur porteuse image sur 503.25 MHz (C25).
- Les oscillogrammes et tension sont mésurées en mode RECORD ou PLAY.
- Les semi-conducteurs indiqués dans le schéma de principe et à la liste des compostants, sont interchangeables par repère sur ce chassis avec les semi-conducteurs de l'appareil quelle que soit la désignation de type donnée sur ces semi-conducteurs.

NL VEILIGHEIDSINSTRUCTIES

- Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, indentiek aan de oorspronkelijke, worden toegepast. De veiligheidsonderdelen zijn aangeduid met het symbool ⚠
- Alle IC's en vele andere halfgeleiders zijn gevoelig voor elektrostatische ontladingen (ESD). Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor, dat U tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat. Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.
- Sluit een apparaat dat gerepareerd wordt altijd via een scheidingstransformator aan op de netspanning.
- Verwissel nooit modules of andere onderdelen terwijl het apparaat is ingeschakeld.
- Gebruik voor het afregelen plastic i.p.v metalen gereedschap. Dit om mogelijke kortsluiting te voorkomen of een bepaalde schakeling instabiel te maken.

OPMERKINGEN

- De gelijksspanningen en oscillogrammen dienen gemeten te worden ten opzichte van de apparaat aarde.
- De gelijksspanningen en oscillogrammen vermeld in de schema's dienen gemeten te worden met een kleurbalkensignaal beelddraaggolf op 503.25 MHz (C25).
- De oscillogrammen en gelijksspanningen zijn in RECORD of PLAY mode gemeten.
- De halfgeleiders, die in het pricipeschema en in de stuklijsten, zijn vermeld, zijn per positie volledig uitwisselbaar met de halfgeleiders in het apparaat, ongeacht de typeaanduiding op deze halfgeleiders.

E AVISOS

- Las instrucciones de seguridad exigen que, después de la reparación, el aparato se encuentre en el estado original y que las piezas de repuesto, utilizadas para la reparación, sean idénticas a las originales.
  Los componentes de seguridad están marcados con ⚠
- Todos los IC y semiconductores son sensibles a descargas electrostáticas (ESD). Un tratamiento no conforme a las instrucciones de semiconductores, en caso de reparación, podría llevar a la destrucción de estos componentes o a una reducción drástica de la duración. En caso de reparación tenga cuidado de que esté al mismo potencial que la masa del aparato, por una pulsera con resistencia. Ponga todos los componentes, herramientas y recursos al mismo potencial.
- Para reparar un aparato hay que conectarlo siempre a la alimentación a través de un transformador de aislamiento.
- Cuando un aparato está en marcha no pueden ser cambiados módulos u otras piezas de repuesto.
- Para los ajustes hay que utilizar exclusivamente herramientas de plástico (nunca herramientas metálicas). Así se evitarán cortocircuitos y circuitos inestables.

NOTAS

- Hay que medir las tensiones continuas y los oscilogramas contra la masa del aparato.
- Las tensiones continuas y los oscilogramas mencionados en los esquemas tienen que ser medidos de la manera siguiente: señal barra de color portadora de imagen en 503.25MHz (C25)
- Los oscilogramas y las tensiones continuas son medidas en "RECORD" y "PLAYBACK"
- Los componentes mencionados en las listas se los puede cambiar por los componentes en el aparato, a pesar de eventuales designaciones de tipos.

I AVVERTIMENTI

- Le prescrizioni di sicurezza richiedono che l'apparecchio sia ricondotto alle condizioni originali e che siano usati ricambi originali. Componenti di sicurezza sono marcati con ⚠
- Tutti gli IC e semiconduttori sono sensibili a scariche elettrostatiche (ESD). Noncuranze durante la riparazione di semiconduttori possono danneggiarli o condurre ad una riduzione drastica della durata. Durante la riparazione assicurarsi di essere collegati allo stesso potenziale attraverso un bracciale di protezione contro scariche elettrostatiche. Inoltre tenere anche tutti i componenti e gli attrezzi a questo potenziale.
- Apparecchi da riparare bisogna collegarli sempre via un trasformatore isolante (separatore) alla tensione normale.
- Non scambiare moduli o altri componenti quando l'apparecchio è in funzione.
- Per l'accordo usare soltanto attrezzi di plastica (non usare attrezzi metallici). Cosí si evitano cortocircuiti e collegamenti instabili.

OSSERVAZIONI

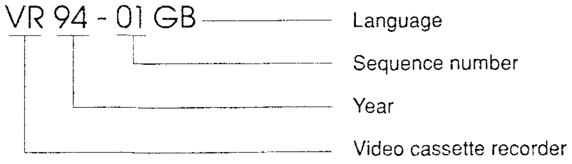
- Misurare le tensioni continue e gli oscillogrammi riferiendosi alla massa dell'apparecchio.
- Le tensioni continue e gli oscillogrammi indicati negli schemi di collegamento devono essere misurati secondo le condizioni seguenti: segnale barre colore, portante dell'immagine su: 503.25 MHz (C25).
- Gli oscillogrammi e le tensioni continue sono misurati in RECORD o PLAYBACK.
- I semiconduttori che sono menzionati negli schemi e nelle liste sono intercambiabili con quelli di pari tipo nonostante siano montati in posizione diversie.

MODIFICATIONS

Description of the system used for publishing modification data and supplements to the service manual.

All modification data and supplements to the Service Manual are published by means of Service Information bulletins.

Each Service information has a number, for example :


VR 94 - 01 GB
Language
Sequence number
Year
Video cassette recorder

A Service Information bulletin concists of a front sheet, as the case may be followed by supplementary and/or replacement sheets.

Replacement sheets serve to replace existing sheets in the Service Manual. These sheets are identified by an additional letter after the page number, for example 5-1a. Page 5-1a then takes the place of page 5-1.

Supplementary sheets are inserted between the existing sheets in the Service Manual. These sheets can be identified by an additional figure following the page number, for example 5-1-1.

Sheet 5-1-1 should be inserted after page 5-1.

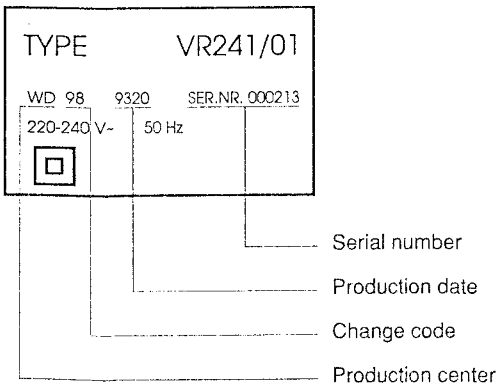
Description of the system by means of which modifications are indicated in the recorder.

All important parts of the recorder, such as tape deck, p.c. boards and modules, are provided with a sticker. These stickers specify a number of product data. The meaning of this data will now be explained for the most important sections.

- **The complete recorder**

The type plate is located at the back of the recorder, below an example of such a type plate is given.

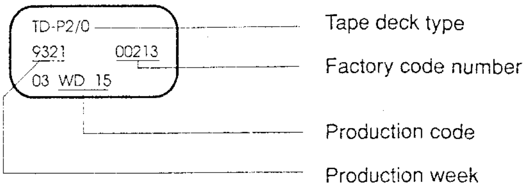
Type plate :


TYPE
VR241/01
WD 98
9320
SER.NR. 000213
220-240 V~
50 Hz
Serial number
Production date
Change code
Production center

Note :

In the case of an important modification to the recorder the productionscode on the type plate is increased by one. E.g. 00 becomes 01.

- Tape deck


TD-P2/0
9321
00213
03 WD 15
Tape deck type
Factory code number
Production code
Production week

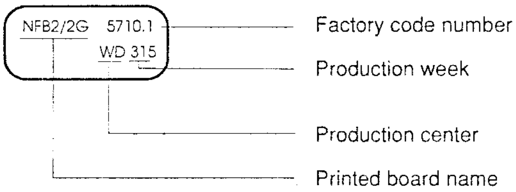
Note :

The production code and the serial number on the tape deck need not correspond to the production code and the serial number on the type plate.

- **Printed panels**

The stickers are generally located on the track side of the module.

Example :


NFB2/2G
5710.1
WD 315
Factory code number
Production week
Production center
Printed board name

Remarks :

The production status number will not always be mentioned.

In case of an important modification, the last figure of the factory code number (point number) is increased by one. E.g. 5710.1 becomes 5710.2.

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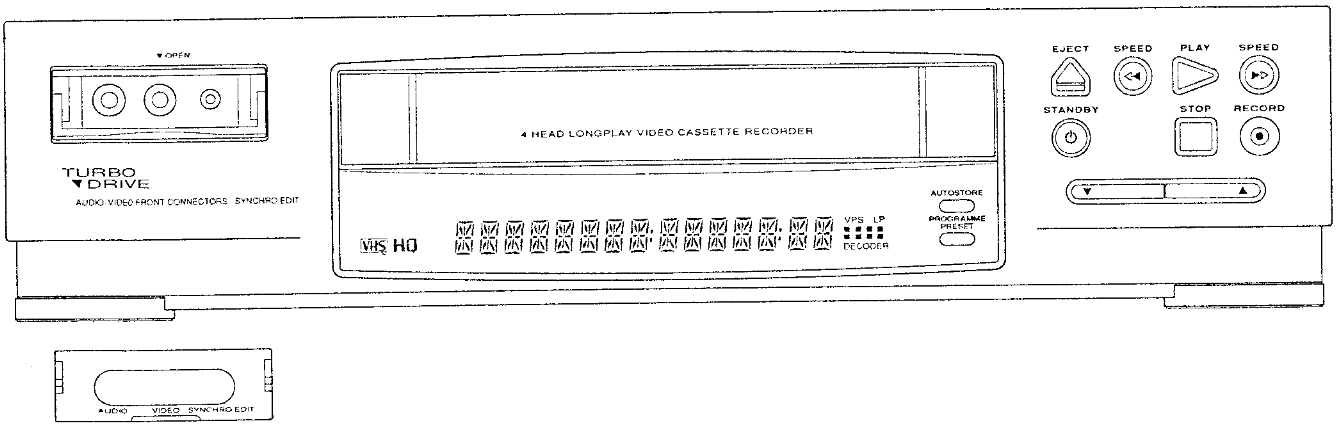
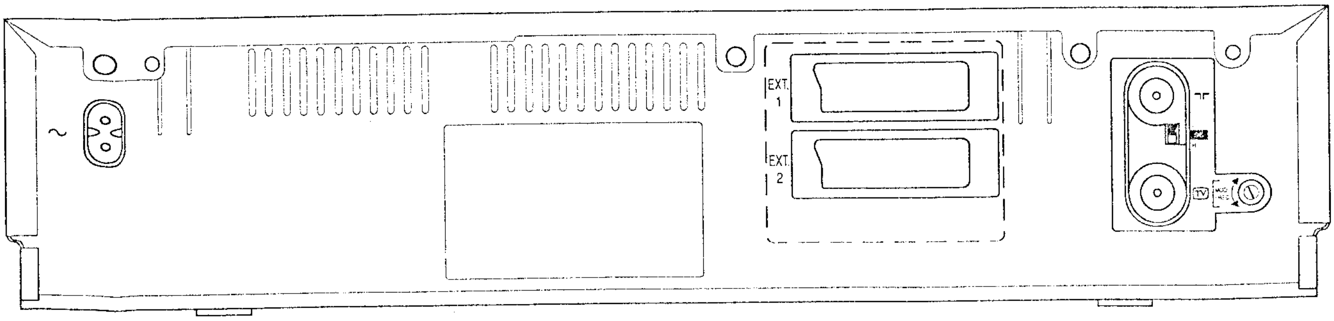
Symbol on front of video recorder

AUTOSTORE	Autostore
PROG. PRESET	Programme preset
EJECT	Cassette eject
◁◀ SPEED	Rewind/Reverse scanning
PLAY	Playback
SPEED ▶▷	Forward wind Forward scanning
STANDBY ⏻	Switch off
STOP	Stop
RECORD ●	Record
▼	Down / Minus, programme number
▲	Up / Plus, programme number
AUDIO	Audio chinch
VIDEO	Video chinch
SYNCHRO EDIT	Synchro edit

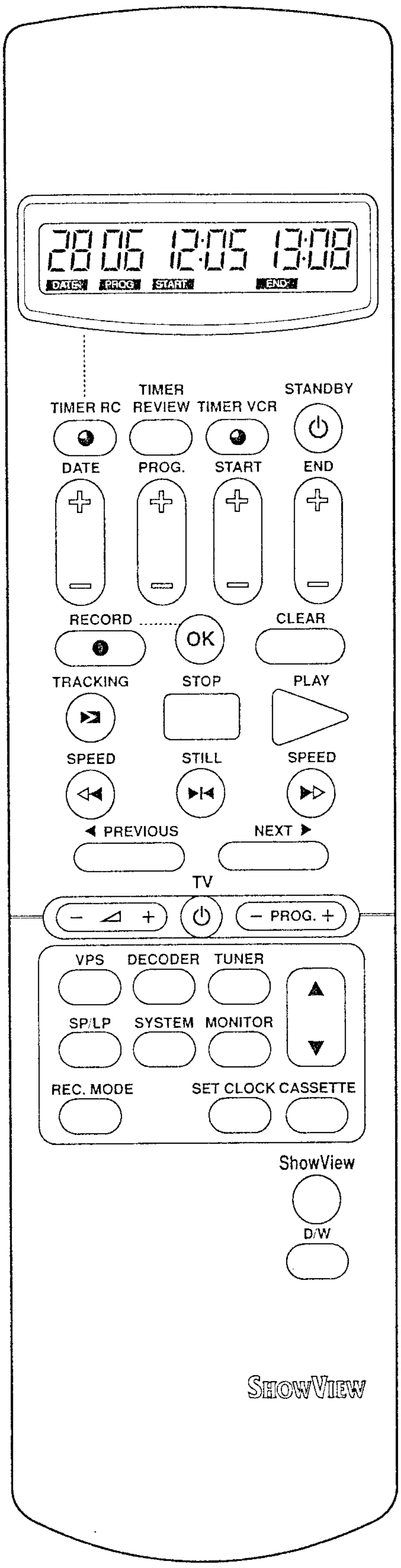

▼ OPEN
TURBO
▼ DRIVE
AUDIO·VIDEO FRONT CONNECTORS SYNCHRO EDIT
4 HEAD LONGPLAY VIDEO CASSETTE RECORDER
VHS HQ
VPS LP
DECODER
AUTOSTORE
PROGRAMME PRESET
EJECT
SPEED
PLAY
SPEED
STANDBY
STOP
RECORD
AUDIO VIDEO SYNCHRO EDIT

Symbol on back of video recorder

┬	Aerial input socket
(TV)	Aerial output socket
∼	Mains socket
EXT 1	AV-Euro socket (Scart)
EXT 2	AV-Euro socket (Scart)
MOD. FREQ.	Channel control
SIG	Attenuator switch


∼
EXT. 1
EXT. 2
TV

The remote control


2806 12:05 13:08
DATE
PROG
START
END
TIMER RC
TIMER REVIEW
TIMER VCR
STANDBY
DATE
PROG.
START
END
RECORD
OK
CLEAR
TRACKING
STOP
PLAY
SPEED
STILL
SPEED
◀ PREVIOUS
NEXT ▶
TV
– PROG. +
VPS
DECODER
TUNER
SP/LP
SYSTEM
MONITOR
REC. MODE
SET CLOCK
CASSETTE
ShowView
D/W
SHOWVIEW

TIMER RC ●	Timer RC
TIMER REVIEW	Timer Review
TIMER VCR ●	Timer VCR
STANDBY ⏻	Standby
DATE +/-	Timer Date +/–
PROG. +/-	Timer Programme +/–
START +/-	Timer Start Time +/–
END +/-	Timer Stop Time +/–
RECORD ●	Record (OK and RECORD ● button simultaneously)
OK	OK
CLEAR	Reset/clear
TRACKING ▶	Tracking/optimum setting
STOP	Stop
PLAY	Playback
◀◀ SPEED	Rewind/Reverse scanning
STILL ▶◀	Pause/Still picture
SPEED ▶▷	Wind/Forward scanning
◀ PREVIOUS	Previous picture
NEXT ▶	Next picture
VPS	VPS On/Off
DECODER	Decoder
TUNER	Tuner
▲	Up
▼	Down
SP/LP	Tape speed selection (SP/LP)
SYSTEM	System
MONITOR	Monitor
REC.MODE	Record mode
SET CLOCK	Set clock on video recorder
CASSETTE	Cassette
SHOW VIEW	'ShowView' programming
D/W	Daily/weekly programming

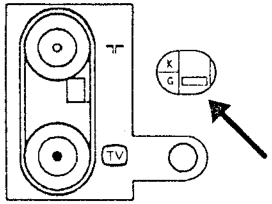
Additional TV functions:

– ⊿ +	Up/Down TV
⏻	Switch On/Off
– PROG. +	Up/Down programme number

Note: Only works on televisions with the same remote control code.

The G/K switch

You can connect this video recorder with a TV set equipped either with a West European PAL-B,G TV-standard ('G') or with an East European SECAM-D,K TV-standard ('K').
If you don't hear the sound from the video recorder during playback, switch to the other TV-standard.
The switch is positioned at the back. In our factory the switch G/K is set to position 'G'.



Setting the clock and date on the video recorder

In order to be able to programme recordings, you must first ensure that the video recorder clock is correctly set. To do this, use the DOWN▼ or UP▲ buttons on the remote control in all the following steps.

❶ Press the SET CLOCK button on the remote control. 'TIME' will appear in the video recorder display. Set the current time.

TIME 15:14

❷ Press the OK button. 'YEAR' will appear in the display. Set the current year.

YEAR 1993

❸ Press the OK button again. 'MONTH' will appear in the display. Set the current month.

MONTH 06

❹ Press the OK button again. 'DATE' will appear in the display. Set today's date.

DATE 1

❺ Press the OK button again. The time and date have now been set. In confirmation, 'READY' will appear briefly in the display.

READY 15:14

Setting the display language and the wide screen format

You can select from ten languages for the display on your video recorder and select the screen format.

❶ Ensure that there is no cassette in the cassette slot. With the video recorder switched off, press the KASSETTE and WIEDERGABE buttons simultaneously.

❷ Use the ▼ or ▲ button to select the required display language, e.g.: 'ENGLISH'.

DEUTSCH

❸ Press the OK button **twice.**

❹ '4:3' appears in the display. If you have one of the new wide screen TV sets, use the ▲ button to switch over to the '16:9' format. Otherwise, leave the setting at '4:3'.

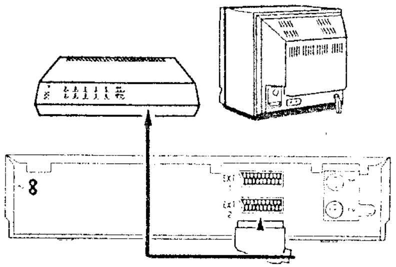
❺ Finally, press the BEREITSCHAFT ⏻ button.

Connecting a decoder

Some TV broadcasters transmit encoded television signals which you can only see with a purchased or rented decoder. You can connect such a decoder (descrambler) to this video recorder.

❶ Connect the decoder to the video recorder with an AV-Euro cable (EXT 2 socket).
You will find a description of how to store TV channels with the decoder in the chapter **'Storing TV channels'**.

❷ Connect the TV set to the EXT 1 socket.



Note:
* You cannot use the decoder with your video recorder and your TV set simultaneously.
* On your video recorder select the programme number that you allocated to the decoder function when storing the channel numbers. The video recorder will then automatically use the decoder.

Still picture/Super-slow motion

❶ Press the [PLAY ▶] button on the remote control.

❷ Press the [STILL ▶|◀] button. The picture will stand still.
Each time you press [STILL ▶|◀] again the picture will move on one step at a time.
Hold down the [STILL ▶|◀] button. The picture will be played in super-slow motion.

❸ Press the [PLAY ▶] button to continue playing back at the normal speed.

Special note:
* If the still picture vibrates vertically, keep pressing the [TRACKING] button until the vibration disappears.
If you pass the optimum setting, repeat this step with the [TRACKING] button.
You only have to find the optimum setting for your TV set once as the video recorder will store it automatically.
Please note, however, that interference may still occur with poor quality hired cassettes.
This is not a fault in your video recorder.

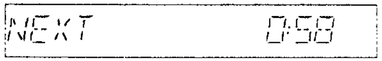
Searching for a tape position

Sometimes you may have recorded two or more TV programmes on one cassette.
So that you do not have to spend time searching, your video recorder offers you an automatic search facility.

The video recorder marks the tape with code marks every time you start to record. You can search for these code marks on the tape using the [PREVIOUS] and [NEXT] buttons on your remote control.

❶ Press the [NEXT] button to select the next code mark or the [PREVIOUS] button for the previous code mark.

Either 'NEXT' or 'PREVIOUS' will appear in your video recorder display.



❷ Once the video recorder finds the code mark it will automatically switch to playback.

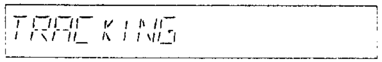
Note:
* When you press any tape transport button (e.g.: the [PLAY ▶] or [PAUSE / STOP ❚❚ ■] button) this search function will be stopped.
* You cannot use this function with recordings made on another video recorder that does not have this function.

How do I eliminate picture interference?

Every time a cassette is loaded the video recorder will **automatically** set the correct tracking position.
For **recordings made on another video recorder** you may be able to improve on the automatic setting as follows:

❶ Press the [PLAY ▶] button on your remote control.

❷ Press the [TRACKING] button on your remote control.



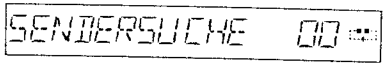
❸ Press the [PLAY ▶] button as soon as the playback quality is at its best. This setting will remain until you remove the cassette.

Automatic channel search

The video recorder will search for all TV channels at the same time.

❶ Switch on the TV set.
Many TV sets **switch automatically** to the programme number for the video recorder at step ❷.
However, this will only function if your video recorder is connected to the TV set with a scart cable.
Otherwise, select the video programme number on your TV set.

❷ With the video recorder switched off, press the AUTOSTORE button on your video recorder **for a few seconds.** The automatic channel search function starts. 'AUTOSTORE' appears in the display.



❸ Wait until all the TV channels have been found. This can take several minutes.

❹ All the TV channels have been found.
If the video recorder recognizes that the TV set has been connected via a scart cable, the allocation of the TV channels will begin automatically.
Otherwise, the automatic channel search will stop **here.** Then read further in the next section.

❺ 'SELECT TV P 01' appears in the display.

❻ Confirm with the OK button on the remote control for the video recorder. The video recorder compares the TV channels on the TV set and the video recorder.

If the video recorder has the same TV channel (e.g.: 'P 01') as the TV set, then it stores it.

❼ Wait until, e.g., 'SELECT TV P 02' appears in the display.

❽ Select, either **on the TV set** or with the remote control for the TV set, the next programme number, e.g.: '2'.

❾ Confirm with the OK button on the remote control for the video recorder.

❿ Repeat steps ❼ to ❾ until all the TV channels have been allocated.
If you wish to finish prematurely, press the BEREITSCHAFT ⏻ button.

Finally, check again that all the TV channels are in the same sequence on both the video recorder and the TV set.
You can read about how to change the sequence in the next section, 'Allocating channel numbers'.

Note:
* After any subsequent activation of the search function, the newly-found TV channels will be added at the end of those previously stored.
* You can store up to 42 TV channels.
* When you activate the 'Automatic channel Search' function, any TIMER blocks which have been programmed will be cleared.

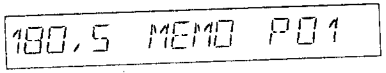
Allocating channel numbers (Programme

Allocating channel numbers (Programme Preset)

You can allocate any desired programme number to the TV channels stored by the Automatic Channel Search. For example, so that they are in the same sequence as on the TV set.

❶ Switch on your TV set.
Many TV sets **switch automatically** to the programme number for the video recorder at step ❷.
However, this will only function if your video recorder is connected to the TV set with a scart cable.
Otherwise, select on your TV set the programme number for the video recorder.

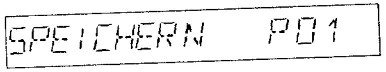
❷ Press the PRESET ALLOC. button on your video recorder **for a few seconds**.
A frequency number and 'STORE P 01' will appear in the display.
You will find a 'Frequency Table' on the last page of this Operating Manual.



❸ Use the ▲ or ▼ button on your remote control to select the TV channel to which you wish to allocate programme number 'P 01'.

Note:
* Have you used a scart cable to connect the video recorder to your TV set and does your TV set respond to the switch-over with the MONITOR button on the remote control? If so, you can switch to and fro between TV reception and video recorder reception. This is the easiest way for you to allocate the same TV channels to the same programme numbers on both appliances.

❹ Confirm the allocation by pressing the OK button on the remote control. 'STORED' will appear briefly in the display.
If you wish to delete an **unwanted** TV channel, press the CLEAR button.



❺ The video recorder will now display the next programme number, 'P 02'. Repeat steps ❸ and ❹ until you have numbered all the TV channels.

❻ When you have finished, press the PRESET ALLOC. button on your video recorder.

Note:
* Unused (free) programme numbers cannot be selected.
* If you wish to delete an **unwanted** TV channel, press the PRESET ALLOC. button. Then, select the associated programme number and press the CLEAR button.
* By pressing the VPS button you can display the name of the TV channel, e.g.: BBC 1, while you are allocating the channel numbers. Of course, the name can only be displayed when it is indeed being transmitted by the TV station.
* If a TV station broadcasts encoded programmes and your video recorder is connected to a decoder, press the DECODER button on the remote control at step ❸. 'DECODER' appears in the display.
The video recorder will activate the decoder function from now on when you select this TV channel number (= this programme number).
* If you want to fine tune the automatic TV channel setting (step ❸), press the TRACKING button.
Now you can use the +/- function to vary from the standard value '0' within a range of +4 to -4.
Important: Such fine re-tuning is only necessary and useful in **special cases**, e.g. when there are stripes on the picture in cable-TV systems. However, the picture and sound quality may deteriorate.
* If the picture quality is poor, e.g.: negative or rolling, you might have selected the wrong TV standard, e.g.: the PAL standard instead of the SECAM standard or vice versa. Press the SYSTEM button at step ❸ to change the TV standard.

Manual channel search

In certain cases the Automatic Channel Search may not be able to find all of the TV channels (e.g. coded TV channels). You can then use this manual method to set the channels.

❶ Switch on the TV set and select the programme number for the video recorder.

❷ Press the TUNER button on the remote control.

P01 TUNER

❸ Press the PRESET ALLOC. button on the video recorder **for more than five seconds.**

180,5 MAN ABST

❹ Hold down the ▼ or ▲ button on the remote control until you have found the right TV channel. A changing frequency number will appear in the display. If you know the frequency number of a TV channel, you can **also directly** enter the frequency (4 digits) with the digit buttons 0-9.

If the TV channel you have found is transmitted encoded and your video recorder is connected to a decoder, press the DECODER button on your remote control. 'DECODER' appears in the video recorder display.
The video recorder will activate the decoder function from now on when you select this TV channel number (= this programme number).

❺ Press the OK button on your remote control.

180,5 MEMO P01

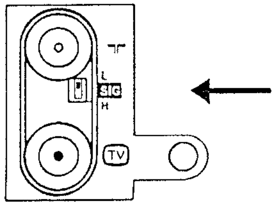
❻ Use the ▼ or ▲ button on your video recorder to select the programme number that you wish to allocate to this TV channel.

SPEICHERN P01

Attenuator switch - SIG

You should normally leave the attenuator switch at the back of the appliance in the L position.

Only use the H position if there is a great deal of interference when receiving TV stations with strong signals.



Auto-assembling

You can use the auto-assembling function to join individual recordings without any annoying flickering between the recordings.

❶ Press the PLAY► button. Search for the correct position on the tape and then stop the playback by pressing the PAUSE/STOP ❚❚ ■ button. 'PAUSE' will appear in the display.

P01 PAUSE 0:05

❷ Now start recording as usual by pressing the RECORD ● button.

Synchronous Editing (Synchro-Edit)

You can edit synchronously with a suitable connection cable between an appropriately equipped camcorder and the video recorder.

Both appliances are started at the right time with the help of a synchronized pulse and the adjustable 'switch-on' (pre-roll) time.
Two different operating and cabling variations are possible. Connect both appliances when they are switched off.

Pay attention also to the operating instructions for your camcorder. The video/audio signal is transmitted via the AUDIO and VIDEO sockets in the video recorder. These sockets can be found at the front of the video recorder, behind a flap on the left.

① Press the **REC.MODE** button several times until 'EDIT' appears in the display.

② You can change the 'switch-on' (pre-roll) time with the ▼ or ▲ button. The display will show, e.g. 'START 1:56' (seconds).

③ Confirm your setting with the PAUSE / STOP button.

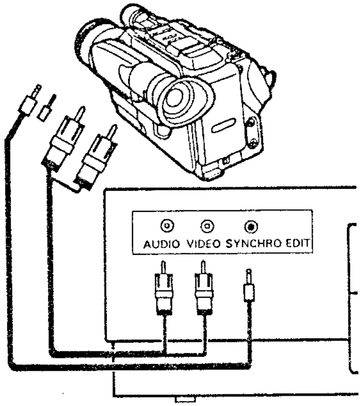
④ On the video recorder, locate the right tape position for the recording. Press the PAUSE / STOP button again.

⑤ Locate the right tape position on the camcorder.

⑥ Press the 'PAUSE' button on the camcorder.

⑦ Corresponding to the above cabling, there are two ways to start editing.

Variant 1:

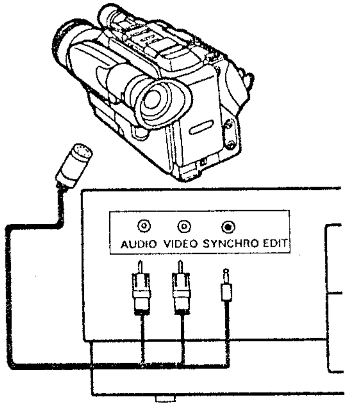


⑧ Start the editing process with the AUFNAHME button on the video recorder. The camcorder starts with 'PLAYBACK' and the video recorder starts synchronously with 'RECORD'.

⑨ Stop the recording with the PAUSE / STOP button on the video recorder.

⑩ Switch off the video recorder with the BEREITSCHAFT ⏻ button.

Variant 2:



⑧ Start the editing process, e.g. with the 'EDIT' button on the camcorder. The camcorder starts with 'PLAYBACK' and the video recorder starts synchronously with 'RECORD'.

⑨ Stop the recording with the 'PAUSE' button on the camcorder.

⑩ Switch off the video recorder with the BEREITSCHAFT ⏻ button.

Note:
* If the start of the scene to be edited is missing, then the setting for the 'pre-roll' time is too long. Simply set a shorter time (e.g. 1:40) as described in step ②. If the recording starts before the scene to be edited, the setting for the pre-roll time is too short. Then you must increase the set time, e.g. to 2:10.

Long play function

You can reduce the recording speed by half. This makes it possible to record, for example, 8 hours instead of 4 hours on an E240 cassette.

❶ **Before** recording, select the 'LP' (=Long Play) recording speed by pressing the SP/LP button. 'LP' will appear in the display.

❷ During playback the video recorder will automatically select the correct playback speed.

Note:
* You will obtain the best picture quality by recording at the standard speed ('SP').

What is 'Programme Delivery Control' (PDC)?

With PDC, the TV station controls when the video recorder is switched on and off. This means that the video recorder switches on and off at the right time even if a TV programme you have programmed begins earlier or finishes later than expected - provided that the TV station is actually transmitting PDC.
Not all TV stations transmit a PDC code.

Some notes:
* The PDC function is **only** possible with the function 'Programming with TXT/VPT'.
* The first few seconds of a recording may be missing if the switch-on command sent by the TV station is late.
* PDC only functions faultlessly with good TV reception. When reception is poor, some programmed recordings with VPS may not function correctly.
This is not a fault in the video recorder.

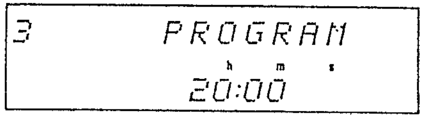
TODAY programming on the video recorder

It is very easy to programme a recording for TODAY. You only need to enter the programme number and the start time.
Please note that only **one** TODAY programming is possible per day.
The recording will be made until the end of the loaded cassette.
Of course, if you activate the VPS function, the recording will be made only until the end of the selected TV programme.

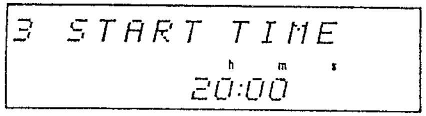
Note:
* You cannot use the PDC function with TODAY programming.
* The tape speed (standard play or long play) can be selected before programming with button SP/LP on the video recorder.
* Make sure a cassette without recording protection is inserted.

❶ Press button TODAY on the video recorder.

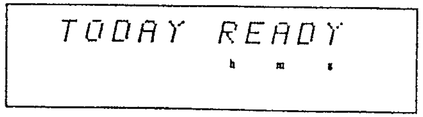
The programme number currently selected flashes.



❷ Use button − or + (recorder) to select the programme number of the TV channel from which you want to record.



❸ Press button TODAY again. The start time flashes in the display.'
Use button − or + (recorder) to select the start time.
Use button SELECT (recorder) to switch VPS on or off.



❹ Have you entered all the data correctly? If so, press button TODAY.
The data are recorded in the video recorder. 'TODAY READY' appears in the video recorder's display.

❺ To finish programming, press button STANDBY ⏻.
TODAY appears in the video recorder's display.

This concludes the programming procedure.

This is not a fault in the video recorder.

❺ To finish programming, press button STANDBY ⏻.
TODAY appears in the video recorder's display.

This concludes the programming procedure.

What is VPS (Video Programming System)?

With VPS, the TV station controls when the video recorder is switched on and off. This means that the video recorder switches itself on and off at the **right time** even if a TV programme you have programmed begins earlier or finishes later than expected.

P01 PAUSE 0:05 VPS

Assuming, that is, that the TV station actually transmits VPS.
Not all TV stations transmit a VPS signal.
You can see if a TV station is transmitting a VPS time code by the indication 'VPS' that appears in the display in the 'STOP' or 'PAUSE' mode.

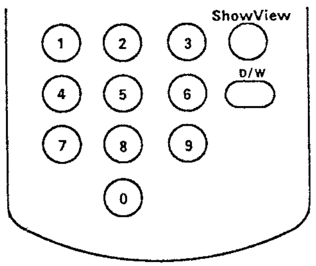
Usually the start time is the **same** as the VPS time code.
If, however, in the TV guide, in addition to a TV programme's start time, a different VPS time code is given, e.g.: '20.15 (VPS 20.14)', you have to enter '20.14' as the start time when programming the VPS time code.
Please pay close attention to the VPS information alongside the individual TV programmes in your TV guide.
This is because a VPS recording will only function if you set the VPS time code exactly to the minute.

Note:
* With VPS you can only programme two chronologically successive TV programmes as two separate TIMER blocks.
* VPS only functions faultlessly with good TV reception. When reception is poor, some programmed recordings with VPS may not function correctly. This is not a fault in the video recorder.

Programming with ShowView

With this method the programming will be as easy as dialing a telephone number. You only have to enter the 'ShowView code' (3 to 9 digits) printed in your TV guide next to the start time of a TV programme. Make sure that a cassette without erase protection has been loaded.

❶ Press the SHOWVIEW button on the remote control.



-- -- -- -- -- -- -- -- --

The video recorder display shows a series of dashes. To exit from this function press the CLEAR button.

❷ Enter the entire 'ShowView code' with the digit buttons 0-9. This code (3 to 9 digits) is found next to the start time of a TV programme in your TV guide.
If you entered an incorrect code number, clear it with the CLEAR button.

60 12 38-- -- --

❸ If you want to repeat programming at daily or weekly intervals, press the D/W button once or twice. The display shows an additional 'DLY' (= daily) or 'WLY' (= weekly). The 'daily' function can only be used for recordings to be made from Mondays to Fridays inclusive.

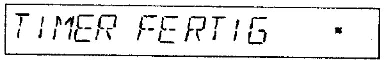
❹ Press the SHOWVIEW button. The programmed code is now decoded. If the video recorder has decoded correctly, the display shows the resultant data. The time is shown in the 24 hour mode.

Note: * If the programme number flashes, e.g.: 'E 2', the video recorder cannot connect the TV channel identification contained in the 'ShowView code' (e.g.: for BBC 1) with the programme number in the video recorder (e.g.: 'P 02').
When this occurs, select the correct programme number with the [PROG. +/−] button and press the [SHOWVIEW] button. The video recorder stores this allocation (e.g.: BBC 1 = P 02). From now on, it will use it for all ShowView programming for this channel.

If necessary the data can now be changed with the buttons [DATE +/−], [PROG. +/−], [START +/−] and [STOP +/−].
If you use VPS, 'VPS' must appear in the display.
Switch VPS on or off with the [VPS] button.

Programming is now complete.
The data has been stored in a TIMER block.
One of the squares on the right-hand side of the display lights up for each TIMER block that is occupied.

❸ Confirm the correct data with the [SHOWVIEW] button.



Note:
* Do you want to use programme number 'E 2' in order to record from an external source (e.g. satellite tuner)? Confirm the 'E 2' programme number displayed in step ❹ with the [SHOWVIEW] button.
* If 'CODE ERROR' appears in the display, the code was incorrect or incorrectly entered. Repeat the entry or end with the [BEREITSCHAFT ⏻] button.
* When the programmed code is decoded, 15 minutes are automatically added to the end time. Check that this does not overlap the start of any subsequent recording. If it does, reset the end time manually.
* If 'SET CLOCK' appears in the display, the internal clock is not set. Set the clock.
* 'Daily' programming can only be used for recordings to be made from Mondays to Fridays inclusive.
* With 'Daily/Weekly' programming, the first recording must take place within a week.

How do I record from a satellite tuner?

You can also programme recordings from an external satellite tuner.

❶ Connect the tuner to the [EXT 2] scart socket. Make sure that the tuner is switched on and that the correct
SAT channel has been selected.

❷ Use one of the two available programming methods to programme a TIMER block. Use programme number 'E 2' in the programming procedure for this external recording source.

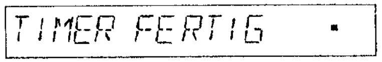
How do I check or correct a TIMER block?

❶ Press the [TIMER REVIEW] button on the remote control.

❷ Now press the [TIMER REVIEW] button as often as necessary until the TIMER block you want to check or correct appears in the video recorder display.
The TIMER blocks will appear in chronological order on the display.

❸ Now press the buttons [DATE +/−], [PROG. +/−], [START +/−], [STOP +/−] to change the recording date, programme number, start time or stop time.
You can switch VPS on and off.
You can select from daily/weekly/date programming with the [D/W] button.

❹ Finally, press the [OK] button. If you have made any changes, the data will now be up to date. 'TIMER READY' will appear in he video recorder display.



Note:
* 'Daily' programming can only be used for recordings to be made from Mondays to Fridays inclusive.
* With 'Daily/Weekly' programming, the first recording must take place within a week.

Audio dubbing

❺ Press the [TIMER RC] button.

Audio dubbing

This function enables you to replace (dub) the sound track of an existing recording with another sound track. To do this, connect an audio source (e.g.: a CD-player) to the AUDIO socket.

❶ Press the WIEDERGABE button to locate the position at which the audio dubbing is to start.

❷ Press the PAUSE / STOP button.

❸ Press the **REC.MODE** button (remote control). 'DUB-PAU' will appear in the video recorder display.

❹ Press the AUFNAHME button.
The video recorder will start to record the sound transmitted from the audio source. The sound track is re-recorded. The sound level is controlled automatically.

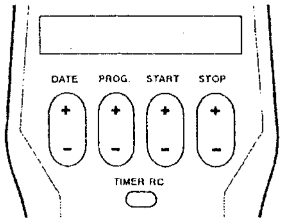
❺ Stop the recording with the PAUSE / STOP button.

❻ Switch off with the BEREITSCHAFT ⏻ button.

Programming on the remote control

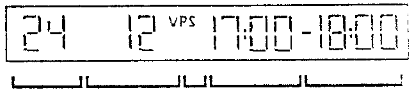
You can enter data for **one** recording **at a time** in the remote control.

The remote control display will indicate all data simultaneously. To enter the data, use the four buttons +/− under the display on the remote control.
Make sure that you have not loaded a cassette with erase protection.



* With 'Daily/Weekly' programming, the first recording must take place within a week.

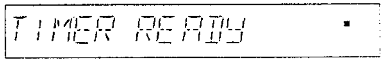
❶ Press the TIMER RC button.



The last data you entered will appear in the remote control display. Change the data in any sequence you choose:

- Set the date of the recording with the DATE +/− button.
- Set the programme number with the PROG. +/− button.
- Switch the VPS on or off with the VPS button.
- Set the start time with the START +/− button.
- Set the stop time with the STOP +/− button.

❷ Have you set all the data correctly? Now point the remote control at the video recorder and press the OK button.



The data is transmitted to the video recorder. 'TIMER READY' will appear in the video recorder display to confirm that the data has been received.

Programming is now complete.
The data has been stored in a TIMER block.
One of the squares on the right-hand side of the display lights up for each TIMER block that is occupied.

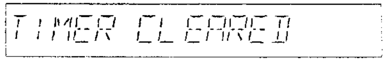
❸ If you want to programme more, start again at step ❶. The video recorder can store up to six programmes.

How do I clear a TIMER block?

❶ Press the TIMER REVIEW button on the remote control.

❷ Press the button TIMER REVIEW as often as necessary until the TIMER block you want to clear appears in the video recorder display.

❸ Press the CLEAR button. The TIMER block will be cleared. 'TIMER CLEARED' will appear in the video recorder display.



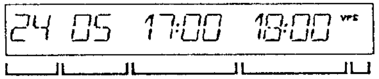
How can I read TXT?

❶ Switch on your TV set and select the programme number you have stored for video playback.

❷ Switch on the video recorder with button [STOP ■].

❸ Now select on the video recorder the TV channel whose TXT pages you want to read. To do this, press button [+] or [–] or the digit buttons [0-9] on the remote control.

❹ Use button [≡] on the remote control to switch on the TXT decoder. The video recorder is now receiving the TXT of the TV channel you chose.
'TXT' will appear in the video recorder display.



On the TV screen you will see the first TXT survey page, which is usually the index. The TXT information line will be included on the upper edge of the TV screen.

❺ Now you can call up the TXT pages that you want to read.
Use the digit buttons [0-9] to enter the number of the desired TXT page. You must always enter this number as three digits.

The page number you enter appears in green in the upper information line on the TV screen. After a few seconds search time, the page you wanted will appear. If you want to read another page, just enter the new page number.
You can use the coloured TXT buttons [≡] (on the remote control) to select directly the TXT page that you want to read. On the lower edge of the TV screen you will find the corresponding coloured notes.

If you want a survey of the entire range of information on offer with TXT, press button [≡]. The TXT index defined for the TV channel then appears.

❻ Switch off the TXT decoder with button [≡].
You will then return to the normal TV channel.

❼ Switch off the video recorder with button [STANDBY ⏻].

The automatic use of the TXT clock by the

An important note:
* When you switch on TXT, most of the other functions of your video recorder are blocked.

Can I store my 'favourite TXT pages'?

For each TV channel you can store up to four TXT page numbers, e.g. the news headlines or the daily TV programme survey. If you store the programme survey page here, programming with TXT will be much easier for you.

❶ Switch on the TXT as usual with button [≡] and select the page you want to have as a 'favourite TXT page'.

❷ Press button [SEL/ VPS]. The TV screen will show you a survey of the 'favourite TXT pages' you have already stored. If you want to select, delete or interrupt another page number, press the corresponding coloured button [≡].

❸ To conclude, press the green button [≡]. You have now stored the page numbers.

❹ Return to the TXT mode with the blue button [≡].

How can I call up my 'favourite TXT pages'?

❶ Switch on the TXT with button [≡]. The first favourite TXT page will appear on the TV screen.

❷ Use the blue or red button [≡] to select other favourite TXT pages. You can enter the page number directly with buttons [PAUSE / STOP].

❸ Press button [≡] to return to the normal video recorder mode.

To enlarge the print

❼ Switch off the video recorder with button STANDBY ⏻ .

The automatic use of the TXT clock by the video recorder

Store a TV channel that transmits TXT on programme number 'P 1'. From now on, the video recorder takes the correct time from TXT.

Note:
* The date is not corrected automatically.

How can I record TXT subtitles?

❶ Switch on the TXT with button ▤ (remote control) and select the page number of the subtitles page.

❷ Then start the recording as usual with button RECORD .

Some notes:
* You can only record the subtitles from the TXT information. If you select a normal TXT page and press button RECORD , the TXT information will be deleted.
* While you are recording you cannot use TXT. You first have to interrupt the recording with button STOP ■ .

Switching off TXT temporarily

You can use button ▤ on the remote control to switch off TXT temporarily. When you press button ▤ again, the TXT will appear again on the TV screen without you having to call it up.

❸ Press button ▤ to return to the normal video recorder mode.

To enlarge the print

You can use button ▤ to double the print height on the TXT screen. Thus, you can, for example, still read TXT from further away.

❶ Press button ▤ - the upper half of the page will appear enlarged on the TV screen.

❷ If you press button ▤ again - the lower half of the page will appear enlarged on the TV screen.

❸ Press button ▤ again when you want to view the whole TXT page in normal print height.

TXT turns over pages automatically:

If a TXT page takes up more space than is available on the TV screen, this page is divided into sub-pages which are automatically turned over.

❶ By pressing button HOLD ⇔ on the remote control you can stop the pages from being turned over, e.g., if you wish to take your time reading.

❷ This sub-page will remain on the TV screen until you press button HOLD ⇔ again. Then the pages are turned over automatically again.

Calling up concealed information:

Some TXT pages (e.g.: the quiz page) contain questions with concealed answers or information.

❶ Press button ? to make the concealed information appear on the TV screen.

❷ Press button ? once more to make the information disappear again.

> General notes:
> * There are no page numbers beginning with '0' or '9'. If you accidentally select '0' or '9' as the first digit, this error will be indicated by 'P?--' on the information line.
> * If, while selecting a page number, you accidentally press a wrong digit button, you must nevertheless complete a combination of three digits. Only then can you enter the correct page number again.
> * If the number of a chosen page remains green, this means that the TV channel is not transmitting this page at the moment.
>
> * If you wish to change from one TXT channel to another, you first have to switch off the TXT decoder with button [≣].
> Then select the number of the other TV channel whose TXT pages you want to see and switch on the decoder again with button [≣].

Tuner mode. Your video recorder as an extension of your TV set

You can also use your video recorder as a TV receiver (tuner). This is handy if your TV set does not have remote control or if it has fewer storage places for TV channels than the number of TV channels it could actually receive.

This is how you go about it:

❶ Switch on the TV set. Select the programme number you have earmarked for playback on the video recorder.

❷ Press the [TUNER] button on the remote control. 'TUNER' ' and a programme number will appear in the display.

P01 TUNER

❸ Choose the required programme number with the [+] or [−] button.

View Mode

❹ Switch the video recorder off by pressing the [STANDBY] button when you no longer want to watch television.

Channel name display

When you are watching or recording from TV channels that transmit the VPS signal, you can display the name of the TV channel (e.g.: 'BBC1') on the TV screen.

❶ Press the [VPS] button.

> Note:
> * You can use this function in the Pause, Stop, Record, Programme Preset and Tuner modes.

Changing the TV standard manually

If you play back recordings made on other video recorders or if you record from an external source (such as a camcorder via the AV-Euro socket [EXT 2]), the automatic TV standard switch-over between PAL and SECAM may not always work properly.

❶ If you are recording, **first** select the standard of your recording source by pressing the [SYSTEM] button.
You can also switch over **during** playback.
The display will show for a few seconds:

Press once	: **'PAL'** for the PAL-B,G standard
Press twice	: **'SECAM'** for the SECAM-L standard
Press three times	: **'MESECAM'** for the MESECAM standard

❷ If you interrupt a recording or playback by pressing the [STOP ■] button, the video recorder switches back to 'automatic'.

Switching the built-in modulator on or off

In the last section we talked about interference that back to 'automatic'.

View Mode

When you connect another appliance to the EXT 2 socket you will be able to use the following additional functions. The appliance can be a second video recorder, a decoder, a satellite receiver or a CD video player.

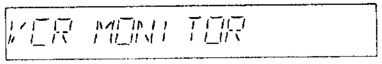
- Thus, if the second appliance transmits a control signal, for example, during playback, the (switched on) video recorder will recognize it and automatically switch to 'View Mode'.
  You can switch View Mode on and off with the MONITOR button.
- Even when the video recorder is switched off, the AV-Euro connection from the TV set to the second appliance is still operational.

Note:
* If you have selected the programme number 'E 1 ' or 'E 2 ', the video recorder cannot switch over to View Mode. This also applies to programme numbers for which the decoder function has been activated.
* The function reacts **only** if your TV set also has this switch-over function and you are using an AV-Euro cable to connect your video recorder to the TV set.

TV monitor function

Switch your TV set to the 'AV' programme number (Audio/Video input) by pressing the MONITOR button. This enables you to see the picture from the video recorder on the TV screen. Your video recorder must be switched on.

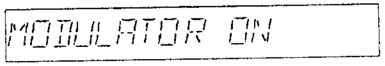
'VCR MONITOR' will appear in the display for a few seconds. Press the button again to switch the monitor function off again.



Note:
* The monitor function will respond **only** if your TV set also has this switch-over function and you are using an AV-Euro cable to connect your video recorder to the TV set.
* The monitor button does not respond during playback.

Switching the built-in modulator on or off

In the last section we talked about interference that could occur on the television. If you **cannot eliminate** picture or sound interference using the above method you can switch off the built-in modulator.
You can only do this if you have connected the video recorder to the TV set using an AV-Euro cable.



❶ Press the EJECT ▲ and PAUSE / STOP II ■ buttons on the video recorder simultaneously. The switch's current position will appear in the display as 'MODULATOR ON'.

❷ Press the EJECT ▲ and PAUSE / STOP II ■ buttons simultaneously again for more than five seconds. This will switch to 'MODULATOR OFF'. Switch the modulator back on in the same way.

2. SERVICE TEST PROGRAM

2.1.Introduction

A service test program has been included in the software program of the micro processors. This service test program is divided into four operating modes:

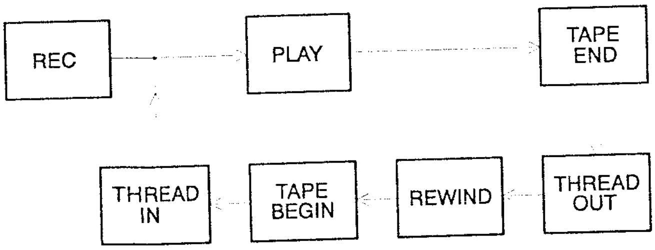
- Checking the tape drive functions/control µP mask number
- Checking the sensors in the tape drive+tape drive status/deck µP mask number
- Operating hours meter/console µP mask number
- Continous running test

2.2 Calling the service test program

Simultaneous pressing the "STOP" key on the remote control and the "PLAY" key on the unit for at least 5 seconds calls the service test program. The display will then show the information on the display. (see Fig. 1)
The service test program can be called from any operating state of the VCR other than the station search, install, set clock and cassette select. While it is operating in the service mode, the VCR remains fully operational for all tape drive functions. Pressing the "STAND-BY" key or disconnecting the unit from the mains switches the test program off.

2.3. Continuous running

While in the service test program the unit can be submitted to continuous running. For this purpose, insert a cassette and select one of the following modes "PLAY", "REC" or "REWIND". The functions are then carried out continuously. This test serves to find intermittent errors. The last occuring error is stored in the EEPROM (the stored error is saved even in case of mains failure). The continuous running test is terminated by quitting the service test program.


REC
PLAY
TAPE END
THREAD IN
TAPE BEGIN
REWIND
THREAD OUT

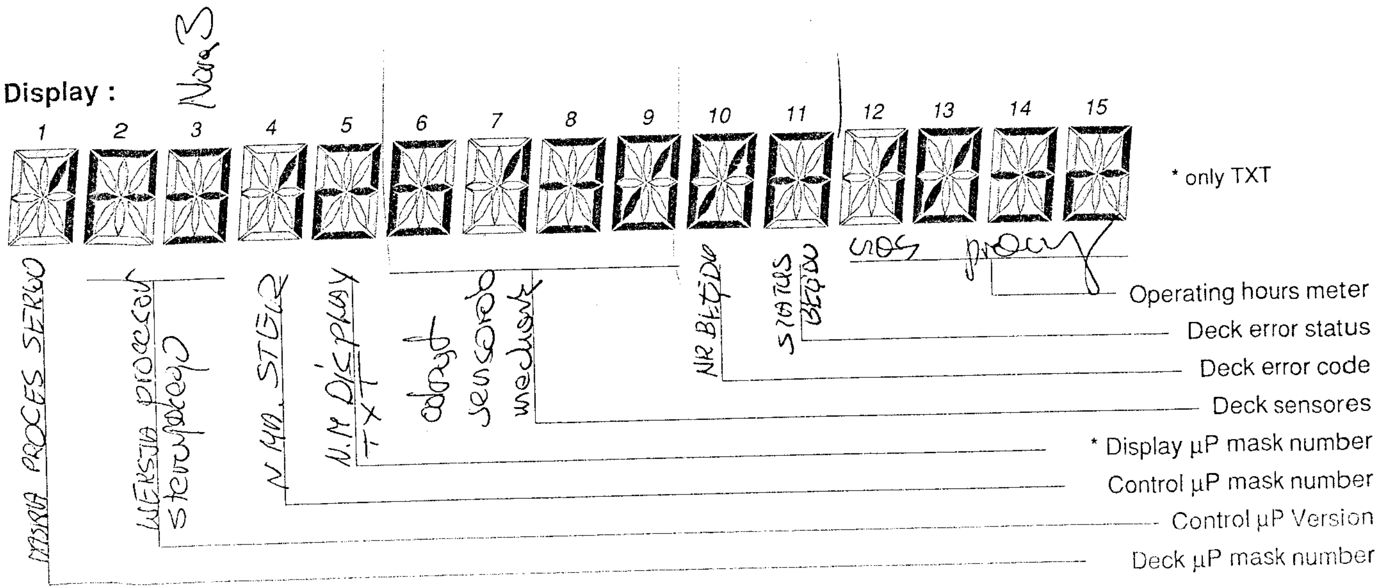
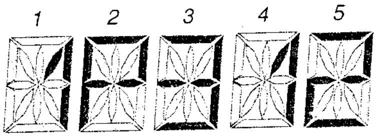

Display :
Nora 3
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
* only TXT
MASKA PROCES SERWO
WERSJA PROCESOR sterującego
N MA. STER
N.M DISPLAY TXT
odczyt sensorów mechanizmu
NR BŁĘDU
STATUS BŁĘDU
czas pracy
Operating hours meter
Deck error status
Deck error code
Deck sensores
* Display µP mask number
Control µP mask number
Control µP Version
Deck µP mask number

Fig. 1

2.7 Indication of the µP mask numbers

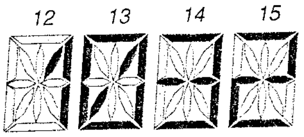
The indication is five-figured, numbers 1, 2, 3, 4, 5.



Digit 1: Deck µP mask number (NTD2-*1*U)
Digit 2: Mask indication
Digit 3: Family (*3* ... Nora 3)
Digit 4: Control µP mask number (NDCP1-*1*U)
Digit 5: Display µP version (only TXT)

2.5. Operating hours meter

The tape counter disply then indicates the number of hours the head disc has been running.



2.6. Monitoring the tape deck functions

If there is no bellow mentioned signal, the unit tries to move the lift to "EJECT".

2.6.1. Threading in and threading out duration

The sensor signal used to check the threading in and out duration is (FTA) obtained from the butterfly sensor which monitors the revolutions of the threading motor.

2.6.2. No rotation of the left or the right reel disc

The signals sensed to check rotation are the tachometer signals from the left (WTAL) and the right (WTAR) reel disc.

2.6.3. No rotation of the head disc motor

The PG/FG signal is used for this disc rotation. It is derived from the e.m.f. of the non-current-carrying coil of the head disc motor and indicates the position of the head disc.

2.6.4. Error of the capstan motor

For this control the FGD-signal is used.

[illegible] [illegible]
STOP + PLAY

2.7 EEPROM

2.7.1 Erasing the EEPROM

- Remove the mains supply to the VCR.
- Press the "WIND", "REWIND" and "DOWN" keys simultaneously and while the keys are held down reconnect the mains supply.

This erases and initializes all data in the EEPROM (with the exception of deck parameters and options), including the TV stations programmed by the customer. The internal processor RAM is also erased.

2.7.2 "Studio like picture control" compensation (only N4)

If a new EEPROM has to be installed during a repair, it will have to be re-initialised for the "studio like picture control" feature.

- Feed in video signal via the SCART socket or the aerial.
- Insert a cassette (not a SVHS tape)
- Call up the service test program by pressing the STOP button on the remote control and the PLAY button on the machine simultaneously for at least 5 seconds. (A message such as the following will appear on the display : See fig. 1)
- Press first the PLAY button on the remote control and the RECORD button on the machine simultaneously. The machine will thread in the tape and make a recording in SP (about 4 seconds) and then another recording in LP (about 4 seconds).
- When compensation has been completed the VCR will rewind, play back the recording, and switch to STAND BY. (In the event of an error the cassette will be ejected).

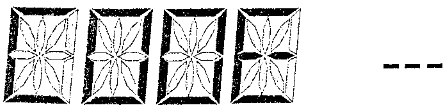
2.7.3 Initialising the EEPROM

If a new EEPROM has to be installed during repair work, it will have to be re-initialised.

Initialisation :

Call up the servicing test program by simultaneously pressing the STOP button on the remote contro and the PLAY button on the video recorder for at least 5 seconds. (A message such as in Fig. 1 will appear in the display.)

When you press the STOP button on the remote control and the PLAY button on the video recorder again, the following display will appear :



Enter a three-figure code (see code table) to set the right options. Confirm the code input by pressing the OK or the PROGRAMME PRESET or STORE or the CODE button. If you make an incorrect entry the video recorder will switch to stand-by.

Wył. z sieci

Czyszczenie eprom

+ - przewija i przegra

dół ▽ ↓

CODE TABLE FOR OPTIONS : pres 012

not turbo	16*9	audio dubbing synchro edit	follow me	gemstar *	showview *	2 scart	CODE
0	0	0	0	0	0	0	20
0	0	0	0	0	0	1	154
0	0	0	0	0	1	0	288
0	0	0	0	0	1	1	119
0	0	0	1	0	0	0	183
0	0	0	1	0	0	1	14
0	0	0	1	0	1	0	148
0	0	0	1	0	1	1	570
0	0	1	0	0	0	0	39
0	0	1	0	0	0	1	173
0	0	1	0	0	1	0	4
0	0	1	0	0	1	1	138
0	0	1	1	0	0	0	202
0	0	1	1	0	0	1	33
0	0	1	1	0	1	0	167
0	0	1	1	0	1	1	589
0	1	0	0	0	0	0	58
0	1	0	0	0	0	1	192
0	1	0	0	0	1	0	23
0	1	0	0	0	1	1	157
0	1	0	1	0	0	0	221
0	1	0	1	0	0	1	52
0	1	0	1	0	1	0	186
0	1	0	1	0	1	1	305
0	1	1	0	0	0	0	77
0	1	1	0	0	0	1	211
0	1	1	0	0	1	0	42
0	1	1	0	0	1	1	176
0	1	1	1	0	0	0	240
0	1	1	1	0	0	1	71
0	1	1	1	0	1	0	205
0	1	1	1	0	1	1	324
1	0	0	0	0	0	0	96
1	0	0	0	0	0	1	230
1	0	0	0	0	1	0	61
1	0	0	0	0	1	1	195
1	0	0	1	0	0	0	259
1	0	0	1	0	0	1	90
1	0	0	1	0	1	0	224
1	0	0	1	0	1	1	343
1	0	1	0	0	0	0	115
1	0	1	0	0	0	1	249
1	0	1	0	0	1	0	80
1	0	1	0	0	1	1	214
1	0	1	1	0	0	0	278
1	0	1	1	0	0	1	109
1	0	1	1	0	1	0	243
1	0	1	1	0	1	1	362
1	1	0	0	0	0	0	134
1	1	0	0	0	0	1	268
1	1	0	0	0	1	0	99
1	1	0	0	0	1	1	233
1	1	0	1	0	0	0	297
1	1	0	1	0	0	1	128
1	1	0	1	0	1	0	262

not turbo	16*9	audio dubbing synchro edit	follow me	gemstar *	showview *	2 scart	CODE
1	1	0	1	0	1	1	381
1	1	1	0	0	0	0	153
1	1	1	0	0	0	1	287
1	1	1	0	0	1	0	118
1	1	1	0	0	1	1	252
1	1	1	1	0	0	0	13
1	1	1	1	0	0	1	147
1	1	1	1	0	1	0	281
1	1	1	1	0	1	1	400
THE GEMSTAR REPAIR CODE MAY ONLY BE USED ON GEMSTAR MACHINES ! (COPYRIGHT ON MODEL PLATE)							
0	0	0	0	1	0	0	253
0	0	0	0	1	0	1	84
0	0	0	0	1	1	0	218
0	0	0	0	1	1	1	49
0	0	0	1	1	0	0	401
0	0	0	1	1	0	1	535
0	0	0	1	1	1	0	366
0	0	0	1	1	1	1	500
0	0	1	0	1	0	0	272
0	0	1	0	1	0	1	103
0	0	1	0	1	1	0	237
0	0	1	0	1	1	1	68
0	0	1	1	1	0	0	420
0	0	1	1	1	0	1	554
0	0	1	1	1	1	0	385
0	0	1	1	1	1	1	519
0	1	0	0	1	0	0	291
0	1	0	0	1	0	1	122
0	1	0	0	1	1	0	256
0	1	0	0	1	1	1	87
0	1	0	1	1	0	0	439
0	1	0	1	1	0	1	573
0	1	0	1	1	1	0	404
0	1	0	1	1	1	1	538
0	1	1	0	1	0	0	7
0	1	1	0	1	0	1	141
0	1	1	0	1	1	0	275
0	1	1	0	1	1	1	106
0	1	1	1	1	0	0	458
0	1	1	1	1	0	1	592
0	1	1	1	1	1	0	423
0	1	1	1	1	1	1	557
1	0	0	0	1	0	0	26
1	0	0	0	1	0	1	160
1	0	0	0	1	1	0	294
1	0	0	0	1	1	1	125
1	0	0	1	1	0	0	477
1	0	0	1	1	0	1	308
1	0	0	1	1	1	0	442
1	0	0	1	1	1	1	576
1	0	1	0	1	0	0	45
1	0	1	0	1	0	1	179

not turbo	16*9	audio dubbing synchro edit	follow me	gemstar *	showview *	2 scart	CODE
1	0	1	0	1	1	0	10
1	0	1	0	1	1	1	144
1	0	1	1	1	0	0	496
1	0	1	1	1	0	1	327
1	0	1	1	1	1	0	461
1	0	1	1	1	1	1	595
1	1	0	0	1	0	0	64
1	1	0	0	1	0	1	198
1	1	0	0	1	1	0	29
1	1	0	0	1	1	1	163
1	1	0	1	1	0	0	515
1	1	0	1	1	0	1	346
1	1	0	1	1	1	0	480
1	1	0	1	1	1	1	311
1	1	1	0	1	0	0	83
1	1	1	0	1	0	1	217
1	1	1	0	1	1	0	48
1	1	1	0	1	1	1	182
1	1	1	1	1	0	0	534
1	1	1	1	1	0	1	365
1	1	1	1	1	1	0	499
1	1	1	1	1	1	1	330

*)

gemstar=0	... gemstar off
gemstar=1, show view=1	... gemstar on (show view)
gemstar=1, show view=0	... gemstar on (video plus)

2.8 Explanation of the error codes (see fig. 2 & 4)

The last error code that occurred is stored in the EEPROM and is saved even if the unit is disconnected from the mains. To erase this error code, press the "CLEAR" key on the remote control while in the service mode.

2.9 Tape deck status (see fig. 3)

The signal (FTA) from the butterfly sensor indicating the revolutions of the threading motor is used in conjunction with the init switch to identify the position of the tape deck. A check of the deck status is given by the two left digits of the display.

Deck error code			
0	no error	5	error of right tacho reel
1	threading error	6	Bebeu blocked headdrum
2	no capstan	7	not used
3	teared tape	8	not used
4	error of left tacho reel	9	not used

Fig. 2

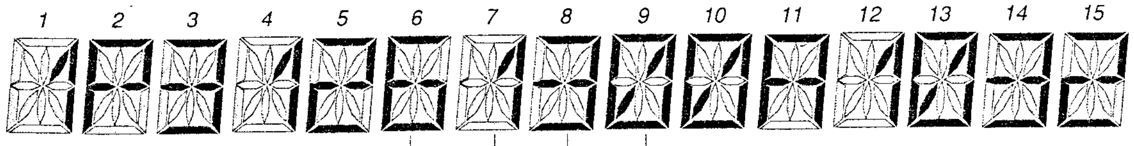
1 Sileilo
2 CooT
3 feald
4

Deck error status			
A	Stand by	N	Reverse
B	Eject on	O	Fast forward
C	Stop	P	Fast reverse
D	Still	Q	Slow
E	Play	R	Slow
F	Tuner	S	Slow
G	Record	T	Tuner eject
H	Play & Tracking	U	Stand by eject
I	Scan forward	V	Index next
J	Scan reverse	W	Index previous
K	Wind	X	not used
L	Rewind	Y	not used
M	Pause	Z	not used

Fig. 4

ELI

Display :



Tape deck status		
Eject	0	5 ... 9
Stop threaded out	6	1 ... 9
Play position	0	5 ... 8
Play reverse	E	0 ... F

Fig. 3

Tape deck sensors	
Left winding tacho	(+1/-1)
Init switcher	(+2/-2)
Threading tacho (FTA)	(+4/-4)

Tape deck sensors	
End of tape detection	(+1/-1)
Begining of tape detection	(+2/-2)
Record protection	(+4/-4)
Right winding tacho	(+8/-8)

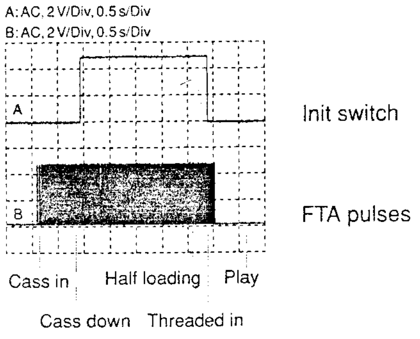
Fig. 5

2.10. Checking the sensors (see fig. 3 & 5)

The indication of the deck sensor control is four-figured.
The output of the bits on the display is hexadecimal (0, 1 , 2 , 3 , 4 , 5 , 6 , 7 , 8 , 9 , A , B , C , D , E , F). Several sensors are indicated per bit. If one of these sensors is activated, the value will change by the increments described below, e.g. tape end (TAE) by +1 or -1.

Function of the Init switch:

The diagram shows the function of the Init switch dependent on the tape deck position.
The number of FTA pulses is important for the position of the tape deck.



SERVICING OF SMDs

(Surface Mounted Devices)

1. General cautions on handling and storage.

Oxidation on the SMDs terminals results in poor soldering. Do not handle SMDs with bare hands.

Avoid for storage places that are sensitive to oxidation such as places with sulfur or chlorine gas, direct sunlight, high temperatures or a high degree of humidity. As a result the capacitance or resistance value of the SMDs may be affected.

Rough handling of circuit boards containing SMDs may cause damage to the components as well as the circuit boards. Circuit boards containing SMDs should never be bent or flexed. Different circuit board materials expand and contract at different rates when heated or cooled and the components and/or solder connections may be damaged due to the stress. Never rub or scrape chip components as this may cause the value of the component to change. Similarly, do not slide the circuit board across any surface.

2. Removal of SMDs

Heat the solder (for 2-3 seconds) at each terminal of the chip. Small components can, by means of litz wire and a limited horizontal force, be removed with the soldering iron. They can also be removed with a solder sucker (see Fig. 1A) or

While holding the SMD with a pair of tweezers take it off gently using the soldering iron's heat applied to each terminal (see Fig. 1B).

Remove the excess solder on the solder lands by means of litz wire or a solder sucker (see Fig. 1C).

Caution on removal :

When handling the soldering iron, use suitable pressure and be careful.

When removing the chip, do not use undue force with the pair of tweezers.

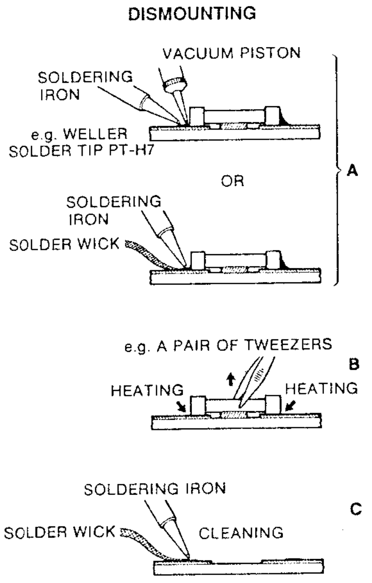

DISMOUNTING
VACUUM PISTON
SOLDERING IRON
e.g. WELLER SOLDER TIP PT-H7
OR
A
SOLDERING IRON
SOLDER WICK
e.g. A PAIR OF TWEEZERS
B
HEATING
HEATING
SOLDERING IRON
C
SOLDER WICK
CLEANING

Fig. 1

The soldering iron to be used (approx. 30 W), must preferably be provided with a thermal control (soldering temperature about 225 to 250°C).

The chip, once removed, must **never** be used again.

3. Attachment of SMDs

Locate the SMD on the solder lands by means of tweezers and solder the component at one side. Ensure that the component is positioned well on the solder lands (see Fig. 2A).

Next complete the soldering of the terminals of the component (see Fig. 2B).

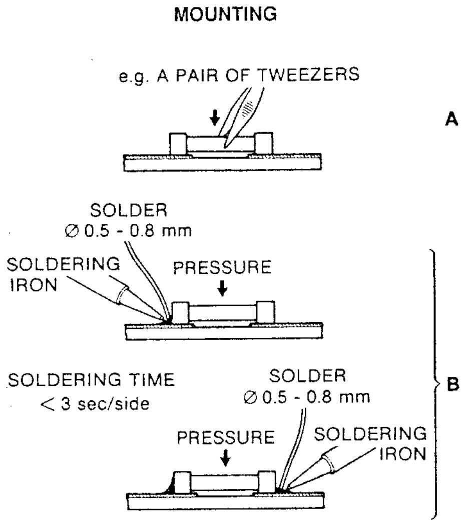

MOUNTING
e.g. A PAIR OF TWEEZERS
A
SOLDER
∅ 0.5 - 0.8 mm
SOLDERING IRON
PRESSURE
SOLDERING TIME
< 3 sec/side
SOLDER
∅ 0.5 - 0.8 mm
B
PRESSURE
SOLDERING IRON

Fig. 2

Caution on attachment :

When soldering the SMD terminals, do not touch them directly with the soldering iron. The soldering must be as quick as possible; care must be taken to avoid damage to the terminals and the body itself.

Keep the SMD's body in contact with the printed board when soldering.

The soldering iron to be used (approx. 30 W) must preferably be provided with a thermal control (soldering temperature about 225 to 250°C).

Soldering should not be done outside the solder land.

Soldering flux (of rosin) may be used but should not be acidic.

After soldering, let the SMD cool down gradually at room temperature.

The quantity of solder must be proportional with the size of the solder land. If the quantity is too great, the SMD might crack or the solder lands might be torn loose from the printed board (see Fig. 3).

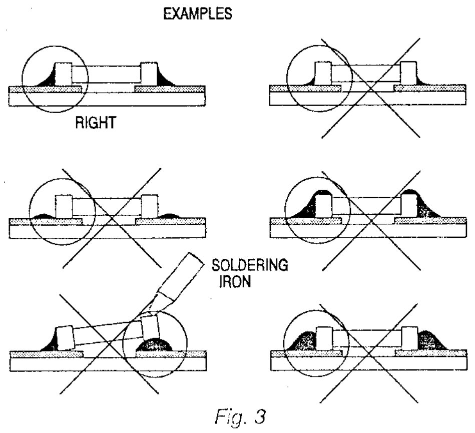
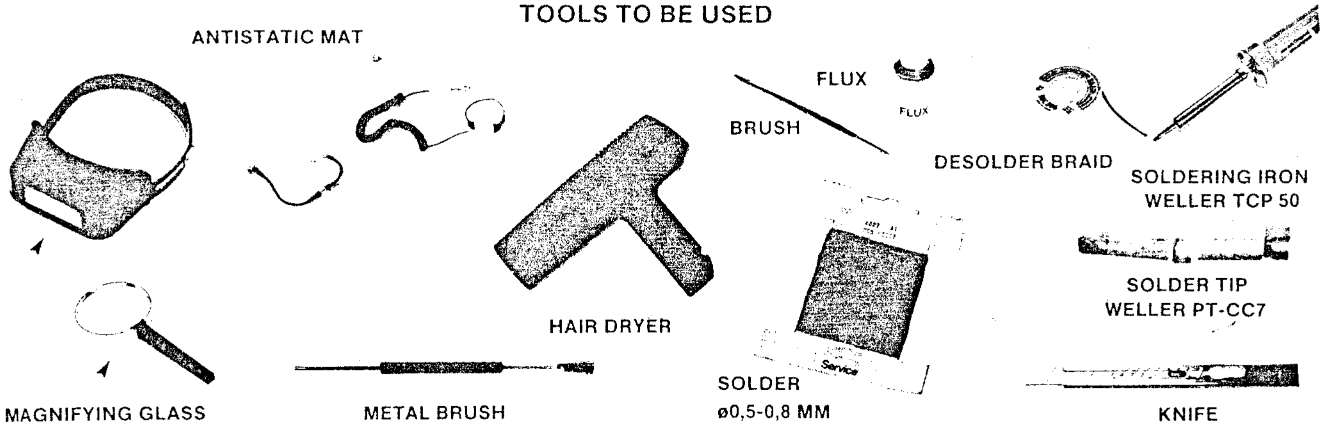

EXAMPLES
RIGHT
SOLDERING IRON

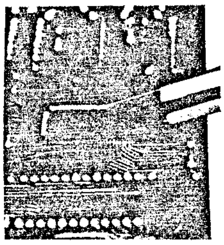
Fig. 3

FLATPACK REPLACEMENT

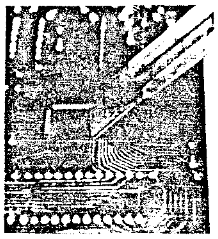
TOOLS TO BE USED


ANTISTATIC MAT
FLUX
BRUSH
DESOLDER BRAID
SOLDERING IRON
WELLER TCP 50
HAIR DRYER
SOLDER TIP
WELLER PT-CC7
MAGNIFYING GLASS
METAL BRUSH
SOLDER
ø0,5-0,8 MM
KNIFE

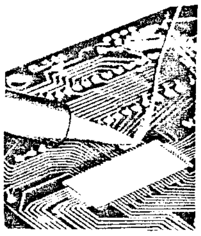
DISMOUNTING

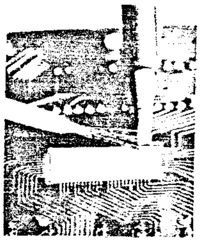


CUTTING
THE LEADS



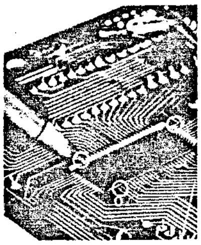
WRONG
TRACKS WILL
BE DAMAGED



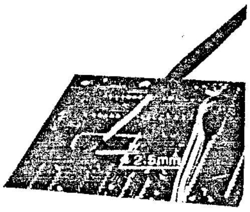


CLEANING
THE TRACKS

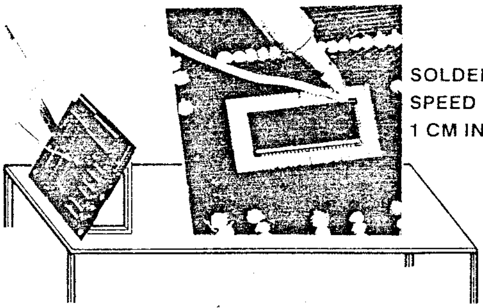
MOUNTING



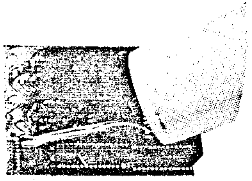
FIXING IC
AT THE CORNERS



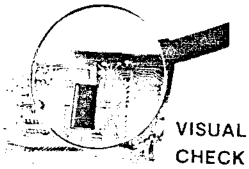
APPLYING FLUX



SOLDERING:
SPEED
1 CM IN 5 SEC.

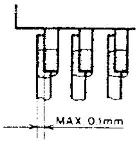


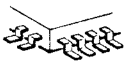
DRYING



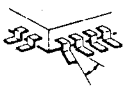
VISUAL
CHECK

ALIGNING THE LEADS

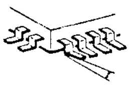




RIGHT

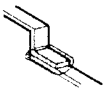


WRONG

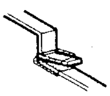


WRONG

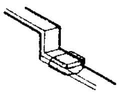
SOLDERING



RIGHT



WRONG



WRONG

REMOVAL OF CASE COMPONENTS AND SERVICE POSITIONS OF PRINTED CIRCUIT BOARDS

1. The casing cover

Dismontling :

- Unscrew the screws A, B, C, D, E, F and G (see fig. 1).
- Pull back the casing cover for appr. 1 cm, and when the side panels are being slightly pressed outward, the cover can be taken off.

Assembly :

- Place the front groove tightly on the front panel.

Then carry out the assembly in reverse order.

2. The bottom plate

- Place the unit with the bottom side up.
- The bottom plate can be lifted off by releasing the six snap hooks (see fig. 2).

3. The front panel

- Remove the casing cover (see point 1).
- Press the two snap hooks on the left and the two snap hooks on the right at the front outward.
- Press the front at the top slightly forward, release the 3 snap hooks at the bottom side of the front and pull forward (see fig. 3).

Note :

For assembly, the front panel has to be slipped on in parallel to the control print. For this purpose, the lever which serves to open the lift flap has to be pushed into the flap guide.

4. Power supply MSM, NSM

The MSM, NSM can be removed from the unit by releasing the two snap hooks (see fig. 4).

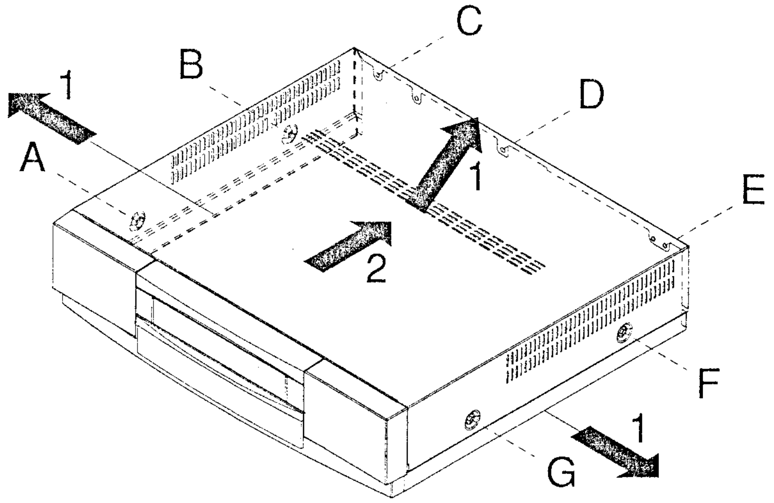


Fig. 1

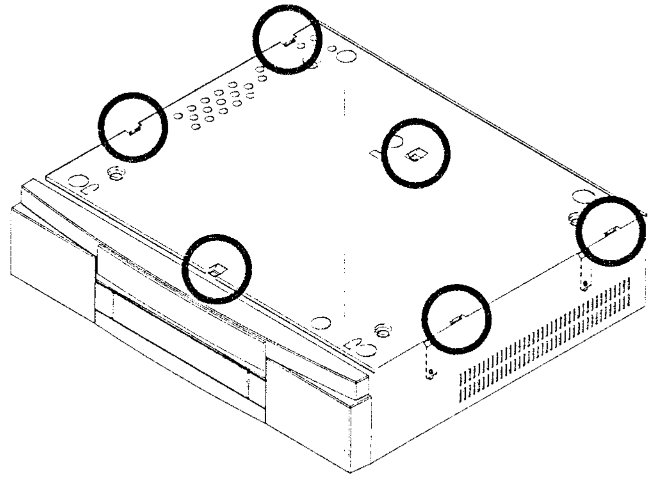


Fig. 2

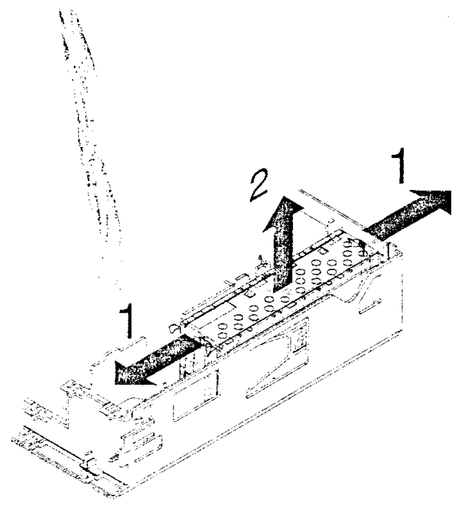


Fig. 4

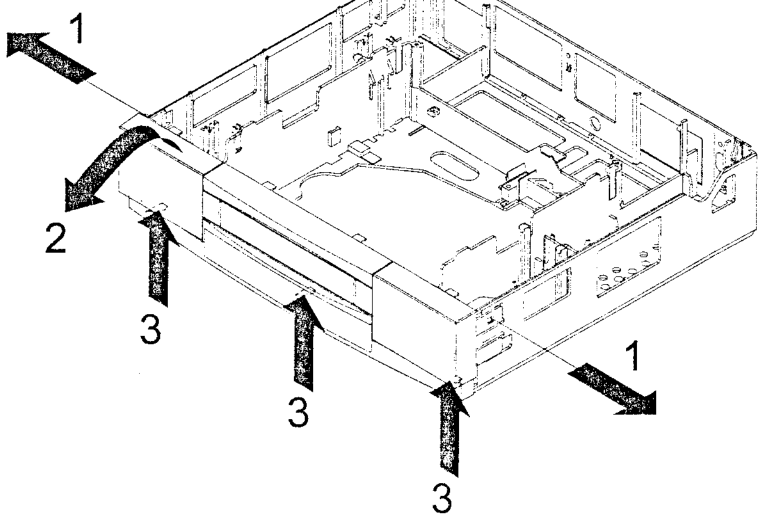


Fig. 3

5. Control print MDC, NDC

- Remove the front panel see point 3.
- The control print can be removed by releasing the snap hooks (see fig. 5).

6. Family board MFB, NFB

- Release the 4 snap hooks (see fig. 6).
- Now lift the MFB, NFB turn it into the service position (see fig. 7) and place it into the slots provided.

7. The Tape deck

- Remove front panel and cover, see point 1 and 3.
- Unlock the 2 lift locks and manually move the lift 5 cm to the rear.
- Unscrew the 3 screws V,R,S (see fig. 8).
- The whole tape deck can now be removed from the frame.

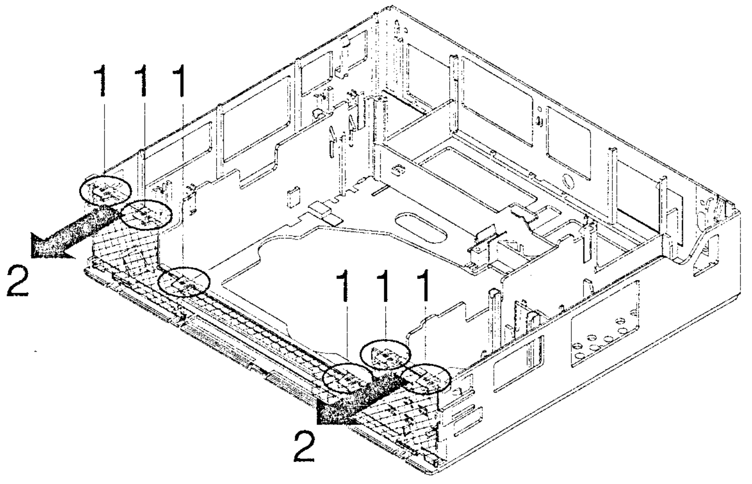


Fig. 5

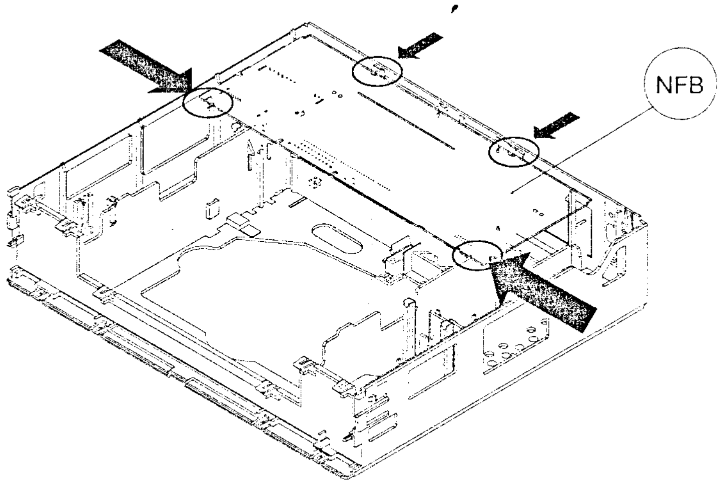


Fig. 6

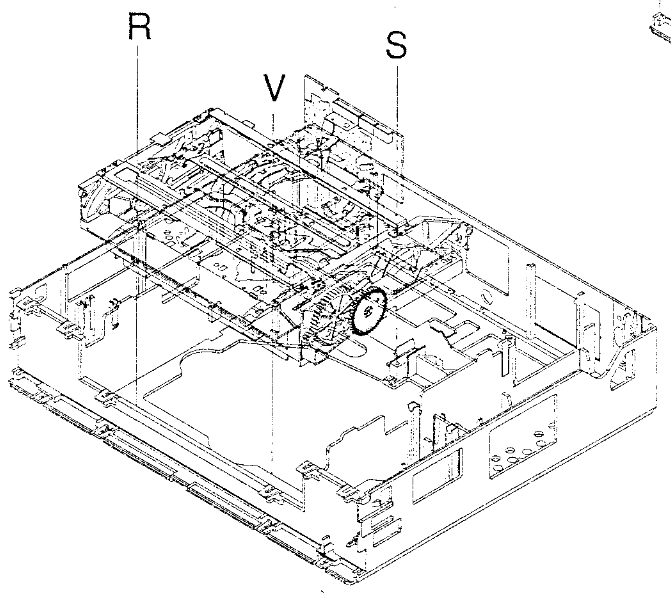


Fig. 8

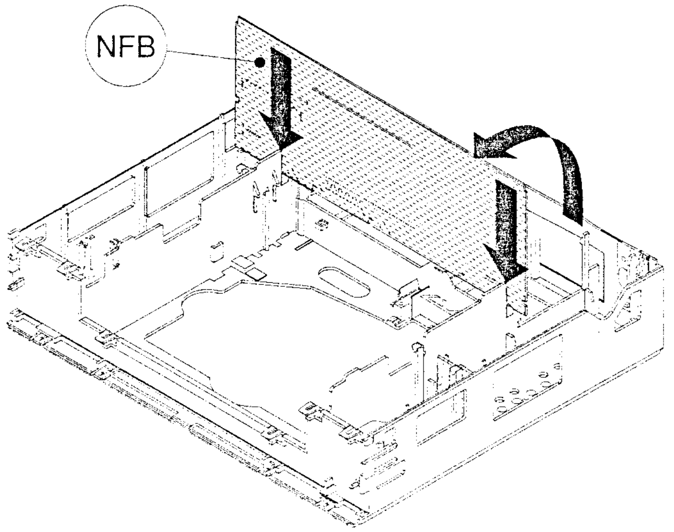


Fig. 7

LIST OF ABBREVIATIONS

+12A	+12V analog supply
+14A	+14V analog
+14M1	+14V for capstan and threading motor
+33V	+33V Tuning supply
+5A (5VA)	+5V analog for I/O SE and LHA
+5D	+5V digital after fuse
+5V2D	+5V digital
+5VAS	+5V analog after fuse
+8M1	Switched capstan motor supply
-28V	-28V for display
-7V	-7V for In/Out
5VPB	+5V Playback
8SC1	Scart 1 pin 8
8SC2	Scart 2 pin 8
AE12	Audio from scart 1 or 2
AEH12	Audio erase head
AFCA	Automatic frequency control analog
AFCD	Automatic frequency control digital
AFV	Audio mono from frontend
AGC	Automatic gain control
AIN1	Audio from scart 1
AMLP	Audio mono linear playback
AMLR	Audio mono linear record
AOUT1	Audio output scart 1
APH	Audio playback head
ARH	Audio record head
BLANKING	Blanking-pulse RGB-loopthrough
BLUE	Blue signal scart 1/2
CAP	Capstan on
CHRS	SECAM record-current
CIN	SECAM chroma-signal
CKPAL	Colour-killer PAL
CLKD1	Serial bus
CREV	Capstan reverse
CROT	Colour rotation
CSI	Colour system information
CSYNC	Sync impulse
CTL12	Control track signal
CVBS	Videosignal
DATD1	Serial bus
DO	Drop-out compensation ON
ENVC	Envelope comparator
ES2	External source 2
ESPBH	Ext.source and PB = high
FFP	Feature frame pulse
FG	Position info capstan
FGD	Position info capstan digital
FMPV	FM playback video signal
FMR	Luminance record-current
FMRV	FM record video signal
FP	Full page
FP_PAL	Full page PAL
FSC	Colour subcarrier
FTA	Threading tacho
FTAD	Threading tacho digital
GAA	Ground analog audio
GAV	Ground analog video
GNDA	Ground analog
GNDD	Ground digital
GNDM1	Ground capstan motor
GNDM2	Ground head drum motor
GREEN	Green signal scart 1/2
H/2	Half line frequency on
HEHI/HELO	Displaytube heater HI LO
HMO	Head drum motor
HP1	Head pulse video (audio)
HSC	Head select control
I/R	Init + record switch
ICSI3	Inverse colour system information
ILED	Inverse LED-tower supply
INIT	Deck switch
INT	Interrupt for display µP
IPAL	Inverse playback audio linear
IPBV	Inverse playback video
IREC	Inverse record audio linear
LED	LED tower supply
LP	Longplay on
MEH1	Main erase head
MEH2	Main erase head GND
MES	Middle east SECAM
MODON	Modulator ON
MTA	Mute audio
NC	Not connected
PAL	PAL-standard
PG/FG	Scanner position/-speed
PIN10	Scart 1 pin 10
POR	Power on reset
POS	Position pulse head disc
PSS	PAL or SECAM-L
RECP	Record protect
RED	Red signal scart 1/2
REEL	Scanner control
REV	Record video
SB1	SECAM band 1
SCL SDA	I^2C bus
SCRTV	Scrambled TV
SEC	SECAM-Standard
SEL-V/H	Syncpulse selection
SH1/2	Video heads
SHC	Video heads common
STR	Shiftregister strobe
SYNC	Control track pulse
TAE	End of tape detection
TAS	Beginning of tape detection
THIO	Threading in/out signal
TMO	Threading motor ON
TMO 12	Threading motor
TRIV	Tracking information video
TXTCVBS	Videosignal
V/H SYNC	Frame or linepulse
VBS	Video to SE
VE12	Video from scart 1 or 2
VFV	Video from frontend
VIDOUT	Video out
VOUT1	Video output scart 1
VSB	Video from SE
VTX	Video output TXT
W/R	Control track write/read
WIND	Wind/Rewind signal
WTL	Wind tacho left
WTLD	Wind tacho left digital
WTR	Wind tacho right
WTRD	Wind tacho right digital

CIRCUIT DESCRIPTIONS

KEYBOARD CONTROL UNIT

The microcomputer IC7101 is the heart of the keyboard control unit and takes over the following functions with the corresponding function groups :

- Evaluation of the keyboard matrix.
- Decoding of the remote control commands from the infrared receiver IC7103.
- Quartz clock
- Integrated RAM for storing the timer data.
- Driving the display data communication between
- Bi-directional serial interface for the keyboard control computer and the sequence control computer
- I^2C bus interface (SDA Pin 79, SCL Pin 23) to the EEPROM, IC7412, on the chassis board. It is also used as a serial data bus output in connection with STROBE Pin 27.
- Generation of the tuner tuning voltage by pulse-width modulation at Pin 80 (5V level) for coarse tuning with 8-bit resolution (VST-sets).
- Generation of the tuner fine tuning voltage with 6-bit resolution and band selection (2 bits) in connection with the serial interface SDA, and STROBE.
- The drifting of the tuner or the aerial signal generates the AFC control voltage in the front end circuit on the chassis board. This voltage is supplied to Pin 18 and the keyboard control computer readjusts the tuner tuning voltage.
- In the case of power failures < 7h the 0.22 F gold capacitor C2999 at Pin 33 supplies the clock and the RAM. The diode D6099 prevents C2999 from discharging. During this period a LOW level exists at Pin 2 so that further functions of the IC are switched off by the system quartz Q1001 at Pin 13 / 14.

SWITCH MODE POWER SUPPLY MSM, [NSM]

The power supply is designed for two alternative layouts (MSM, NSM).
In both versions, the power transistor can either be integrated in the driver IC (SPH 4690) or it can be external (TDA 4605). Either the MSM or the NSM can be installed. This description refers to the MSM version with an external power transistor (TDA 4605). Components in square brackets (e.g. [3619]) refer to the NSM version.

Typical data :

Mains voltage:	175[196] - 265[265] V_{rms} / 45-65 Hz
Max. power:	40 W
Switching frequency:	20[30]-120[220] kHz

all outputs are short circuit protected
efficiency 78% at max. load

Function description (blocking oscillator principle) :

During the forward phase energy is transferred from the mains into the transformer. This energy is then supplied to the load during the off-time of the switching transistor. By control of the switch-on time the energy which is transferred in each cycle is regulated so that the output voltages are independent of load or input voltage variations. The power transistor is controlled by the by the integrated circuit TDA4605[Y7005/7007].

Description of different load-conditiones :

NO LOAD :
The SMPS works in **burst mode** (polling operation mode). That means,it will start up. After some cycles the SMPS is switched off because the output-voltage becomes too high. After the output-voltage has been reduced the SMPS will start up again

REGULATION-RANGE :
The switching frequency is reduced with increasing load. The duty cycle is mainly controlled by the mains voltage. The output-voltage is not very much load controlled.

POINT OF REVERSAL :
At this point of the output characteristics the transferred power is at maximum

OVERLOAD:
The SMPS also works in **burst mode**. The energy in each cycle is limitted so that the output voltage is reduced.

Circuit description :

C2114[2030] becomes charged via R3112[3052, 3054, 3056, 3058] and R3119 and provides the supply for the start-up phase of IC7110[Y7005/Y7007]. After this start-up phase the supply is provided by the transformer's winding 3-4[1-9] via R3127[6027], D6115. BUZ90A[Y7007]/[7035extern!] is the switching transistor of the SMPS. The inductivity of the primary winding 6-9[1-9] determine the system frequency of the circuit.
During forward phase the switching transistor is conductive, and current will flow from the positive supply at pin 6 through the transformer's primary winding and the transistor to ground. As the positive voltage at pin 6[7] of the transformer is constant, the current will increase linearly and create a ramp dependent on the mains voltage and the inductance of the primary winding. A certain amount of energy is stored in the transformer in the form of a magnetic field. The polarity of the voltages at the secundary windings are such that the diodes are non-conducting. Pin 2[2] of the IC sources a constant current during the switch on time. This current charges C2118[2015] and creates a sawtooth voltage which represents the primary current. At the same time the voltage is checked and the switching transistor is turned off when the voltage reaches a certain value which is dependent on the regulating voltage on pin 1[1]. The values of C2118[2015] and R3122[3011] are chosen to ensure that the transformer core cannot become saturated.
When the switching transistor is switched off energy is no longer supplied to the transformer. The inductance of the transformer now tries to maintain the current which has been flowing through it at a constant level (v=L*di/dt). The polarity of the voltage from the transformer therefore becomes reversed. This results in a current flow through the transformer's secondary winding via the diodes and electrolytic capacitors and the load. This current is also ramp shaped (but decreasing).
When the whole of the energy stored in the transformer has been supplied to the load and the magnetic field has disappeared, the voltage from the secondary windings falls bellow the output voltage - which is held constant by the electrolytic capacitors - plus the threshold voltage of the diodes. The current in the secondary winding therefore ceases. At this point the drain-source voltage of the switching transistor is not yet zero because capacitor C2120 contains a certain charge. This charge will start a sine-shaped ringing together with the transformer's self-induction. When the sine-wave passes through zero IC4605[Y7007]/[7005, Pin8] detects this at pin 8[18]. The switching transistor is now switched on again and a new cycle starts.
Regulation of the SMPS is done by altering the conduction time of the switching transistor so that either more or less energy is transferred from the mains into the transformer. The control information is derived from the reference component 7253[7085] which monitors the output voltage of the SMPS. The result is fed to pin 1[1] of the TDA4605[Y7007]{[7005] via an opto-coupler for electrical isolation. The TDA4605[Y7007]{[7005] compares the voltage against an internal reference. The resulting value shifts the reference with which the voltage at pin 2[2] (the image of the primary current) is compared.
IC7253[7085] is a reference-component with an internal 2,4[2,5] V reference voltage and a nominal/ actual-value compare circuit.
C2116, R3129, R3130[3040, 3042, 3044, 2040] and D6114[6040] from a snubber network which limits the peak voltage at switch-off.

The ringing seen in both voltages and currents is caused by stray selfinductances in the transformer. Therefore a passage through zero at pin 8[18] will be ignored after T7135[Y7007]/[7035 extern!] has been switched off (4[4] µs internally fixed). In addition R3125 and C2119 suppress over-shoots.
The voltage of pin 3[3] of TDA4605[Y7007]/[7005] is required for the point of reversal current which is an additional correction current for capacitor C2118[2015]. This current shortens the on-time of T7135[Y7007]/[7035 extern!] by charging C2118[2015]. The point of reversal is also stable at higher mains voltage.
Pin 7[17] is an option. By applying C2115[2023] the start-up phase will be carried out with shortened pulses so that the switching frequency is outside the audibility range.
On the secondary side there are 5 voltages present, rectified by D6201-D6209[6155-6180] and filtered by C2201-C2215[2102-2185]. In some cases two electrolytic capacitors in parallel are used to increase the ability to handle pulse currents.
Items 5203-5210[Y5123-5184] are RF-filter coils which block disturbances caused by clock frequencies of µPs.
The circuit around coil 5103 is a mains filter.

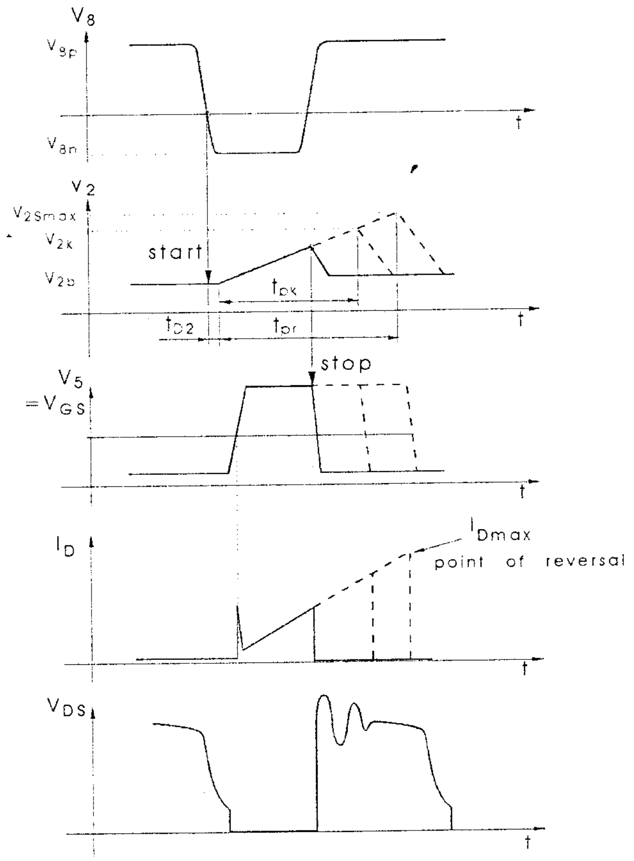


Fig. 1

Description of the "start-up-phase" :

After mains connection, at moment t0 following voltages at the pins of TDA4605[Y7007]/[7005] are increasing: (see Figure 2)

V_6	according to half wave charge via R3112,R3119[3058,3056,3054,3052]
V_2	rising to V_{2max} (typical 6,6[6,6] V)
V_3	rising to the fixed value of voltage divider R3121, R3123[3005, 3007]

Current consumption in this case is 1,6[0,8] mA. The internal reference voltage is switched on at moment t1 (V_6=V_{6E}). Current consumption increases to 12[12] mA max.
The primary current to voltage converter regulates V_2 at V_{2B} and at the moment t_5-t_6 a start pulse is generated.
Feedback at pin 8[18/8] starts the next pulse and so on.
All pulses, start-pulse included, are pulse width controlled by the regulation voltage at pin 1[1]. This voltage is in accordance with the "case of short circuit". Start up is realized by "short circuit pulses" which are extended depending on the regulation voltage.

At the moment t_2 the maximum pulse width is present (V_2=V_{2Smax}) - TDA4605[Y7007]/[7005] is now in "point of reversal mode". V_2 peaks decrease rapidly because the circuit is inside the regulation range. The regulation-loop is locked.
If V_6 drops below limit value V6min before point of reversal is reached, start up will be stopped (pin 5[15/5] is switched low) and V_6 decreased to V_{6A} - IC is switched off. When V_6 increases by half wave charge (see moment t_4) a new cycle can be started at moment t_1.

Start-up phase/ short circuit operation of SPH4690

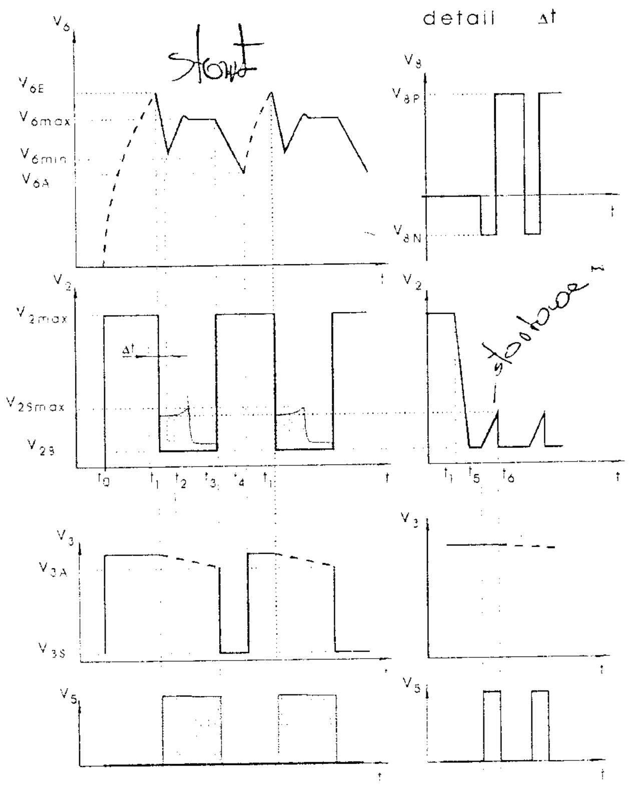


Fig. 2

Regulation-range, Overload and No-load :

After start up the IC is within the regulation range. Voltage at pin 1[1] is typically 400 mV. In case of an increasing load on the secondary side the switch on time will also be increased. The peak voltage value at pin 2[2] also rises to V_{2Smax}. If the secondary load tries to increase again the overload amplifier would start to reduce the pulse width of V5. This point is called "point of reversal". The IC supply voltage V_6 is related to the secondary voltage value. V_6 therefore decreases with increasing load due to the reduced pulse width of V_5.
At the condition $V_6 << V_{6min}$ TDA4605[Y7007]/[Y7005] changes to burst mode (polling operation mode). Short circuit power is small, because the time delay of the half wave start up is high (from the mains frequency). In this case the overload amplifier reduces the pulse width to a certain value (tpk-mark). This minimum pulse width must be guaranteed because it is active in each start-up phase (V_1=0 V).
With decreasing load on the secondary side the pulse width of the switch on pulse (V_5=high) will also be decreased. Switching frequency will be increased to the system frequency of the circuit. If the output voltage is increased up to V_6=V_{6max}, the logic will be blocked and the TDA4605[Y7007]/[7005] will be in burst mode. SMPS works in open circuit operation.

Overtemperature :

TDA4605[Y7007]/[7005] includes an overtemperature circuit which blocks the logic if the chip temperature becomes too high. Start up is possible after reduction of the overtemperature.

AUDIO LINEAR - AL

Signal input for Record or EE Mode (AMLR) is pin 11 of LA7282 where it enters the ALC (Automatic level control) stage. The signal goes via the Rec/Pb switch, an amplifier and mute stages to pin 13. This is the output pin to the I/O section (AMLP).
The attenuator chain on pin 13 sets the necessary levels for the ALC detector with its time constant on pin 10 and for the recording amplifier with the pre-emphasis components L 5601, R3616 and C 2613.
The recording amplifier output is pin 17. The recording current is mixed with the bias current and passed via the head to pin 2 when the switch is closed.
In Pb mode the switch on pin 1 is closed. The PB signal is amplified in the equalizing stage (Time constant between pin 6 and pin 8) and adjusted with R 3606 to avoid influences of head sensitivity. Components 2600 and 3601 determine the head resonance during PB.
In the LP mode the frequency characteristic is adapted by RC networks on pins 4, 5 and 15. The oscillator circuit oscillates at about 70 kHz is used for the erase heads and the bias current. To avoid clicks, the oscillator has to be switched on slowly (Switching stage T 7604, Time constant C 2617, R 3623, Current limiter R 3625). The record voltage for the headamplifier is generated without delay with the switch T7607.
An extra mute transistor on pin 24 switches off the output pin 13 in case of record ("Amtsblatt" requirement).

FRONT END - FV (N1)
(VST-TUNING)

The receiving part consists of the following blocks

1.) Tuner
2.) IF amplifier and demodulator IC TDA 9800
3.) Band select and Tuning voltage generator
4.) 12 V Supply

1. Tuner :

The tuner family UV917/ U943 is used in the VST (Voltage synthesized tuning) version that means without internal PLL circuit. The frequency range 43-158 MHz, 140-360 Mhz and 450-856 MHz can be selected on pin 7, pin 8, and pin 10. Tuning voltage input is pin 11, AGC input is pin 5.

2. IF amplifier and demodulator IC TDA 9800 :

The IF out from the tuner pin 17 passes the SAW filter which type and frequency response depends on the TV system. The TDA 9800 is a PLL Type demodulator. The built in VCO operating at two times the picture carrier is adjusted by the coil 5703 and tuned internally by a varicap diode. The loop filter is connected to pin 6. The VCO control voltage is used for generating the AFC Voltage on pin 15.
The demodulated video signal passes internally a 12 MHz lowpass and comes to pin 13 with 1 V_{pp}. This level is controlled by an AGC circuit with internal reference level. The sound carrier is then suppressed in the trap 1722 and video is then available at pin 7 with 2 V_{pp}.
The Sound IF is filtered in the bandpass 1723 and / or 1724, and goes to the input of the adjustment free FM PLL sound demodulator. The audio signal output is at pin 9 with about 350 mV_{RMS} with a deviation of +/ 27mV_{RMS}.
The operating point of the Tuner AGC can be adjusted with Resistor 3724 to obtain a good signal to noise behaviour together with optimum large signal behaviour.
Additionally the AGC voltage is fed to an analog input of the TVC microcontroller who sends an information about the signal strength to the microprocessor on the front panel. This is done for determining the order of storing the programs in autostore mode.

3. Band select and Tuning voltage generator :

The tuning voltage and band select are controlled by the microprocessor on the MDC, NDC panel. The interface circuit uses a levelconverter to transform the 5 V logic to accurate 12 V levels and a shift register for seriell to parallel data conversion. Following control lines are used: SCL, SDA, and STROBE controls the Shift register and the PWM is a pulse width modulated signal with 4 kHz and 8 bit resolution. 6 bits of the shift register output are used for an D/A converter with a R/2R network (pos 1701). 2 bits are used for the band select logic to switch the tuner between band I III and U.

Remark: The tuner U 943 operates only in the UHF band so it does not need any bandselect logic.

To obtain the necessary resolution of the tuning steps of 60 kHz, 14 bits resolution of the D/A converter is made by adding the 6 bit of the R/2R network (LSB's) with the filtered 8 bit PWM signal (MSB`s). The filtering is done by an active filter with about 15 dB suppression of the fundamental and amplified by about 3.5 to get the full tuning voltage range up to 28 V.

4. 12 V Supply :

The 12 V regulator is stabilized by a TL 431 regulator and is short circuit protected due to its fold back characteristic. Start up capacitor is C2750. The high stability and accuracy is needed for the performance of the tuning voltage. Furthermore this regulator supplies also the linear audio circuit and the record stage of the head amplifier.

FRONT END - FV (N2/3/4/5)
(PLL-TUNING)

The front end is designed to receive :

N2 : PAL BG = /01
PAL I = /05

N3/4/5 : PAL BG = /01
PAL I = /05
SECAM LL = /19
SECAM LL/PAL BG = /39

The receiving section consists of the following areas :

1. Tuner :

In N2 the tuner UV916E for /01, and the U943 for /05 both with internal PLL circuit are used.
In N3/4/5 the tuner UV 916E for /01,/19 and /39 and the U 944C for /05 both with internal PLL circuit are used.
In case of SECAM L' the intermediate frequency of the vision carrier is 33.9 MHz, that is why the AFC circuit has to be switched from 77.8 MHz to 67.8 MHz.
The surface wave filters for /19 and /39 have 2 Nyquist slopes.
So both signals with 33.9 MHz and 38.9 MHz-SC are correctly offered to the demodulator-IC (TDA9802).

2. IF amplifier and demodulator IC :

The IF out from the tuner pin 17 passes via the SAW filter to the 3-stage IF amplifier.
The TDA 9800-9803 is a PLL - type demodulator. The built in VCO operating at the double vision carrier frequency is adjusted by the coils (AFC-Adj.) which are internally tuned by a varicap diode. The loop filter is connected to pin 6. The VCO control voltage is used for generating the AFC Voltage on pin 15.
The demodulated video signal is passed via a 12 MHz low pass filter to pin 13 with a level of 1 V_{pp}. This level is controlled by an AGC circuit with an internal reference level. The sound carrier is then suppressed in the trap and video is available at pin 7 with a level of 2 V_{pp} and after a voltage divider and emitter follower as VFV at 1V_{pp}.
The Sound IF is filtered in the bandpass Pin 13 and is passed to the input of the adjustment free FM PLL sound demodulator Pin 11. The audio signal output at pin 9 is approximately 350 mV_{RMS} with a deviation of +/-27 mV_{RMS}.
The operating point of the Tuner AGC can be adjusted with AGC-Adj. to obtain a good signal to noise behaviour together with optimum large signal behaviour.
The AGC voltage Pin 13 is also fed to an analogue input of the TVC micro controller which sends signal strength information to the microprocessor on the front panel. This is done to determine the order of program storing in the autostore mode.

3. AM demodulator IC TDA 9830 :

(only N3/4/5)

In case of SECAM L the amplitude modulated sound carrier (32.4 MHz) arrives at pin 2 of the SAW filter L9453 and after selection is passed to the AM demodulator TDA 9830.
In case of SECAM L' because of exchanged PC and SC the sound carrier is at 40.4 MHz.
The control signal SECAM BAND 1 (SB1) is diode switched to pin 1 of L9453 the 40.4 MHz BPF.
The demodulated signal is passed to the integrated switch which in multi-standard versions selects between FM sound and AM sound.
The selected signal is available on pin 8 (AFV).

4. Stabilization for the 12 V supply :

4.1 12 V supply (N2) :

The 12 V regulator is stabilized by a TL 431 regulator and is short circuit protected due to its fold back characteristic. Start up capacitor is C2750. The high stability and accuracy is needed for the performance of the tuning voltage.
This regulator also supplies the linear audio circuit and the record stage of the head amplifier.

4.2 12 V supply (N3/5) :

The output voltage is specified with 12 V +1.0/0.6V for a maximum load current of 400 mA. To ensure an uniform current division between the two series pass transistors BC636 (T7793, T7790) connected in parallel, a 6.8 Ω resistor is connected in series with each emitter. This reduces the effect of tolerances and temperature drift on the base emitter voltages. The circuit is short circuit protected, after a short circuit of the output voltage, reset has to be carried out by temporarily removing the mains plug. In this case, the electrolytic capacitor 2790 charges to start the circuit.

VIDEO SIGNAL PROCESSING -VS, -VSIO

N1/2 : MF.. - VSIO
NF.. - VSIO

N3/5 : NF.. - VS
MF.. - VS

N4 : NF.. - VS

1. General :

Boards with extension /39 are for PAL/SECAM L.
Heart of the circuit is the IC LA7191 containing all luminance PAL chroma and SECAM BG chroma circuits in 42 pin shrinked dil case.
For the SECAM L processing the well known TDA4725 is used. The SECAM BG detector is the LA 7311 discriminator. CCD 1H delay line is the MSM 7403RS with 5 V only supply.

2. In/Out (N1/2) :

The I/O circuit makes the selection between two signal sources, the scart input and the frontend. Audio and video signals are switched in the IC 7551. It is controlled by ESPBH and disabled via pin 6 in Play back mode. Scart 1video input is pin 20. The signal passes then the switching diode pos 6509 to pin 3 IC 7551. Scart 1 audio inputs are the pins 2 and 6. Left and right channel are added and fed to pin 2 IC 7551. Zener diodes on all inputs are used for ESD protection purpose. Capacitors are for Amtsblatt requirements. Frontend video comes from pin 7 IC 7702 via an attenuator and an emitterfollower to pin 5 IC 7551. Both the emitterfollower and the diode 6509 are biased by resistor 3513 if they should be on.
Frontend audio output signal from pin 7 IC 7702 (about 350 mV_{rms}) goes via a deemphasis network 3505/2500 to pin 2 IC 7551.

Video output emitterfollower is 7502 which drives pin 19 scart 1 and if necessary the RF Equalizer. The modulator may be switched on by the TVC microprocessor and T7500.

3. Record signal path (N1/2/3/4/5) :

3.1 Luminance:

Pin 37 is the input of the video signal with about 1V_{pp} . It is then controlled by an AGC amplifier (adjustment via pin 39, time constants pin 38 and pin 16), passes a 6 dB attenuator, a 3.5 MHz low pass filter, a clamp, some switches in the noise canceller/dropout compensator part and is output via an amplifier on pin 3. The signal then goes to an emitter follower, a low pass filter and a second emitter follower to pin 4. You have to adjust the E/E Level pot to obtain 0.5V_{pp} on this pin with a 100% white picture. This is necessary for the right values on pin 34 video out and the values of the white and dark clip levels.
Following the signal on pin 4 now without chrominance components it passes a clamp, a detail enhancer (time constant pin 8), a nonlinear emphasis (time constant pin 7, on/off is controlled by the DC level on pin 7) and the main emphasis with internal white and dark clip (time constants between pin 5 and 6).
The signal then goes via the deviation potmeter to pin 42 of the input of the FM modulator. The FM is then filtered, adjusted by the FM record current pot and goes to the summing stage and the head amplifier.
The loop through path outputs the signal via a feedback clamp and an insert stage (control pin 33) to pin 34 and via an emitter follower to the I/O part of the VCR.

3.2 Chrominance PAL :

After the in 3.1 mentioned 6 dB attenuator the signal also comes to the 4.43 Mhz bandpass filter, an ACC (Automatic Chroma Control time constant pin 14), the main converter, a 1 Mhz low pass filter, a killer stage to pin 15 and via the chroma record current to the summing stage.
The 5.06 MHz for the main converter comes via the 5.06 MHz bandpass filter from the sub converter where 4.43 MHz from the VXO and 627 kHz from the Line PLL is mixed. The Line PLL is locked to the composite sync pulse from the sync separator. It uses a 321 x fH VCO (Loop filter on pin 23 and 24). The frequency is then divided by 8 in 4 different 90 degree shifted phases as it is necessary for the VHS standard. Phase shift control input is pin 41 which is also an SP/LP-input. The Line PLL part also produces the Burst Gate Pulse BGP. The VXO is locked to the incoming burst signal via the record APC detector (Loop filter pin 17).
This IC uses a special crystal for which no adjustment is necessary. An additional frequency doubler with the output on pin 21 supplies the 8.86 MHz for the CCD. The H/2 frequency is taken from pin 17 (only for N3/5). It is the information about the phase of chroma for making color inserts on teletext boards possible in the correct phase (option).

3.3.1 Chrominance SECAM BG :

Pin 27 H forces the IC to SECAM BG mode.

- Phase rotation off
- VXO fixed frequency
- filter charcteristicof bandpass more wide
- The SECAM BG detector LA 7311 generates this switching voltage (only for N1/2).

3.3.2 Chrominance SECAM L (N3/4/5) :

(see circuit description CSP)

4. Playback signal path :

4.1 Luminance:

The FM playback voltage goes via the necessary filters to pin 39 of IC 7051.
The FM then goes to a double limiter stage, a FM - demodulator and a sub low pass filter. Pin 3 has a high impedance in play so the connected R/C components act as a linear deemphasis. Pin 2 allows a correction of frequency response and the adjustment of

the Y PB Level. Measuring point for this level is the output pin 34 while you play back a standard 100% white recording.
After correction of the frequency response in the external low pass filter now switched by the LM339 to a slightly different characteristic, the video passes, via pin 4, the 3.5 MHz low pass, the noise canceller and dropout compensator part. For both functions the 1 H CCD is necessary. Pin 12 supplies the video to the CCD and pin 10 receives the signal where a V̲oltage C̲ontrolled A̲mplifier VCA adjusts automatically the gain tolerances of the CCD. For this function the capacitor of pin 9 is important.
You can check CCD function by connecting pin 2 to 5V in E/E mode and then measure on pin 32 the difference signal of 2 lines. After the noise canceller the video passes the nonlinear deemphasis (time constant pin 7 as rec), a noise canceller (time constant pin 8), the picture control stage (controlled by DC on pin 13 2V = soft, 3V = sharp), the Y/Chroma mixing stage and the video output amp to pin 34.

4.2 Chrominance PAL :

627 kHz Chroma from tape goes through a 1 MHz low pass filter and an amplifier with group delay correction to pin 15 of the IC. The chroma is amplified, controlled in the ACC amplifier, mixed with 5.06 MHz and goes via the 4.43 MHz bandpass and an amplifier to the combfilter where crosstalk components from the neighbor tracks are removed. The chroma then comes back to the IC at pin 27 where it is amplified.

4.3.1 Chrominance SECAM BG :

Signal path is about the same as in PAL.
Differences:
- 321 fH VCO locked to sync
- no phase rotation
- Comb filter off
- internal bandpass filter more bandwith
- no colorkiller function color always on

4.3.2 Chrominance SECAM L (N3/4/5) :

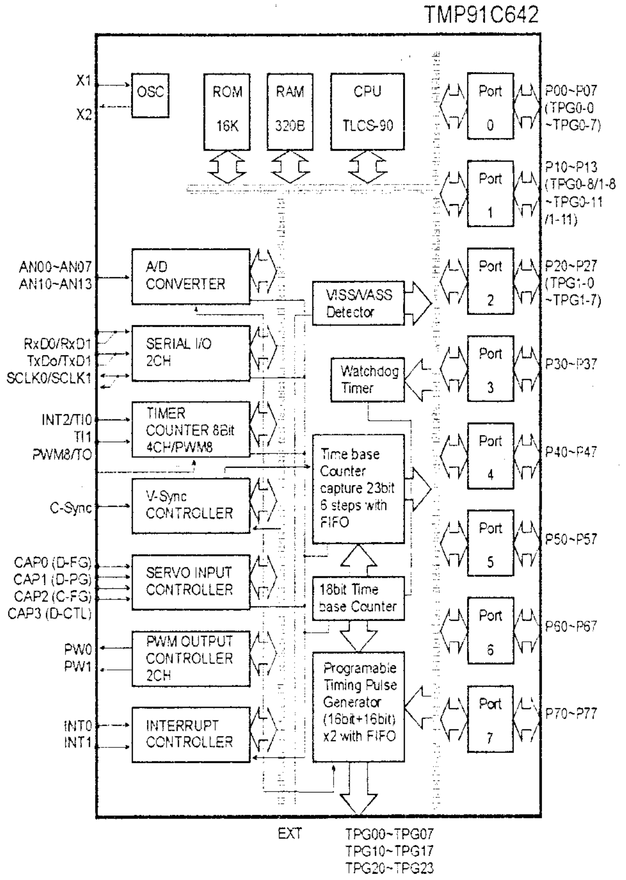
(see circuit description CSP)

DECKELECTRONIC - DE

1. General :

TVC (TMP91C642N-Maske; TMP91P642N-OTP)
The TVC (Toshiba Video Controller) is a one chip microcontroller.

- 16k byte ROM
- 320 byte RAM
- 8-bit A/D converter
- 2 serielle Businterface
- 2 12-bit PWM outputs
- 1 8-bit PWM output
- Composite sync input
- spezielle Servo inputs



8 analogue inputs are available. The input signals are fed to the A/DC via a multiplexer. The resolution of the converter is 8 bit. The maximum permissable input voltage range is 0...5V (defined by the reference voltages AVSS and AVCC).
Four analogue outputs are available each with a 8 bit resolution. These outputs supply a signal of constant frequency. (appr. 21,5 kHz) with variable pulse/interval ratio. It is possible to obtain a resolution of 14 bit by software. To achieve this resolution, two PWM outputs are internally linked. This means loss of one PWM output pin. The second output pin can then only be used as an ordinary circuit output. The possibility of the increased resolution is used by the headwheel drive (REEL line).

2. SAA 1310 Deck mechanics interface :

2.1 CTL-stage :

The IC SAA 1310 contains a write/read stage for the CTL track, with the possibility of interference-free overwriting of an existing CTL track (e.g. if another index code (VISS or VASS) is to be written on the tape). The playback stage is equipped with a "digital", two-stage AGC. By comparators, this circuit logic identifies the size of the output signal supplied by the CTL head and then selects the best amplifier gain in the playback stage. Note: The playback signal from the head follows the law of induction (dΦ>/dt) and is therefore largely - with the exception of the gap function - proportional to the tape speed. The CTL head voltage can therefore vary considerably from vmax when FAST SEARCH (index search) is used to vmin when the LP mode which has the slowest tape speed. The highest speed sets in with FAST WIND or FAST SEARCH (Index search).
To ensure that under the above mentioned conditions the pulse/interval ratio of the tape sync is always correctly reproduced (it is important for the distinction of 1 and 0 for VISS or VASS marks), the amplifier must not be overdriven. The two-stage AGC alone cannot process the large dynamic range of the input voltage. The amplifier is therefore provided with an internal low pass feature (fg = 3 kHz typ.) and also the amplification is further reduced for all winding modes by means of transitor 7403. In this case, the signal WIND = low and T7403 is disabled. The transistor is deliberately polarity inverted, as the inverse operation has the better damping qualities for this application. If T7403 is disabled, the amplifier's feedback network, as well as the external resistor 3454 is also disabled. Alternative short-circuit of R3454 with T7403 permits to reduce the amplification in the proportion

g on / g off = 1 + R3454 / 100

In parallel to the CTL head, there is the R.C. circuit of C2411 (4n7) and R3453 (4k7). Together with the CTL head inductance, the capacitor causes a resonance step-up at approx. 8 kHz. The R3453 causes a steep fall of the frequency transmission characteristic beyond resonance, providing an effective suppression of high-frequency stray pickup. The CTL head signal amplitude in SP is approx. 1...2 mVpp. Therefore the gain of the playback amplifier has to be suitably high. To avoid offset problems, a 47 µF electroytic capacitor (C2410) is built into the negative feedback branch for DC decoupling. Together with the internal 100 Ω feedback resistor, this electrolytic capacitor causes a high-pass behaviour. It must be of sufficient capacity to ensure that the differentiating effect is beyond a cut-off frequency, where the distortions of the signal shapes at the lowest tape speed rates remain negligible. Otherwise overshoots occur after each change of magnetisation on the tape, resulting in faulty triggering of the internal logic and therefore in faulty sync signals. The polarity of the playback amplifier can be reversed with the Capstan-Reverse (CREV) voltage. This enables the TVC always to see the correct sync edge independent of the tape feed direction. The W/R (Write/Read) signal is used to change between record and playback.

W = high and R = low.

The SYNC line (pin 16) is a bidirectional line. In the case of write, a square-wave signal of 40 ms period is output by the TVC . The recording amplifier in the SAA 1310 converts this voltage into a square-wave recording current of approx. +/-2mA. Pin 3 of the SAA 1310 is the buffered output of the IC internal reference (2,5V +/- 0,1V).

2.2 POR (Power On Reset) - Generator :

The POR generator contained in the SAA 1310 requires only one external component. This is the capacitor 2414 which defines the length of the POR pulse. At 33 nF, t por is approx. 30 ms.

2.3 The sensor interface :

The four comparators in the SAA 1310 are used to convert sensor signals to logic levels. Two of these comparators have open collector outputs (pin 11 and 13), which can source a current of 100 mA. The outputs are overload protected by a current limiter and thermal shutdown.
Only the non-inverting input of each comparator is accessible from the outside. The other inputs are connected to the internal reference voltage of nom. 2,5 V. Also the hysteresis of the comparators of approx. 10 mV is set internally.

The following sensors are evalutated:

Comporator 1 (In Pin 5 Out Pin 15) :
FTA threading tachometer. This signal comes from a forked light barrier in the deck. An infra-red light beam is interrupted by a four-blade impeller (butterfly). The output amplitude of the sensor has to have a minimum variation of between 2V and 3V to ensure correct evaluation. By means of R3451 and R3449, an additional hysteresis is obtained.

Comporator 2,3 (In Pin 6,7 Out Pin 14,13) :
WTR/WTL (Winding tachometer right/left) comes from reflected light beams. The minimum output requirement is the same as the FTA.

Comporator 4 (In Pin 8 Out Pin 11) :
FG = Capstan tachometer. This signal comes from the sensor print on the turbo drive via the pre-amplifier of the tacho-HALL sensor in the motor unit. The amplitude of the almost sine-shaped signal is typ. 1 Vpp. The minimum acceptable level is 300mVpp. The signal is AC-coupled via C2415. Therefore the input at pin 8 is connected to the reference voltage at pin 3 via the resistor 3452. The capacitor C2413 in parallel with 3452 is to remove HF noise.

3. Interface to the headwheel motor driver :

The connection to the HMO driver IC on the LHA print is via plug 1915. The speed regulating signal is

REEL he resolution is 14 bit. PG/FG is the combined POS/tachometer signal of TDA5140 (HMO driver).

TRIV (Tracking Information Video) is the envelope information from the head amplifier.

It goes into one of the analogue inputs of the TVC . The current drawn from the +14M2 under ambient temperature conditions is typ. 70mA. During the run-up period of the motor approx. 0.5 A flow for a short time.

4. Interface to the Capstan motor :

4.1 Motor driver interface :

The Capstan motor in the turbo drive is driven via plug 1913. CAP is the Capstan speed signal, which can vary without load between 0 and 5 V. By means of CREV (Capstan reverse) the direction of the motor rotation is changed. The signal is fed via a diode to the motor driver, thus effectively preventing latch-up (otherwise the current limiting will fail). The maximum current consumption of the motor is limited to 1 A. Typical values in PLAY mode are 0,2 ...0,3 A.

4.2 Voltage switch for capstan motor :

Due to the wide speed operating range of the deck mechanics a large power operating range is required of the CMO driver, in the DD-capstan motor module in the deck. To avoid high power dissipation in the circuit, 2 different voltages are provided by the power supply for the CMO, a 14,5V (typ) for the Modes where faster tape movement is required and a +8M2 for PLAY. The switch selection of the voltage is controlled by the WIND siganl and the switching transistor T7406.

4.3 Tachometer preamplifier :

The Tachometer preamplifier is located on the sensor print. It is a DC coupled differential amplifier using discrete components. AC and DC amplification are different to avoid problems with the offset of the Hall element.

5. Threading motor driver :

The TMO driver is provided in bridge circuit using a dual power opamp. L2722. This IC can supply an output current of +/-1A. It has diode protection (fly-back diodes) at the outputs.
Between the IC outputs (Pin 1 and 3) there is a Boucherot element (1 Ω, 100 nF) to suppress a 3 MHz spurious oscillation from the power amplifier. One half of the bridge is controlled via the TMO line and functions as comparator. The other half is an amplifier-integrator with gain 3.9 times. A variation of the input voltage (THIO) between 0 and 5V causes a voltage variation at the output between 0V and nearly supply voltage. In case of a 50% modulation (THIO = 2,5V), there is approx. 7V at PIN3. The integration with C2102 serves to filter out the PWM frequency of approx. 21,5 Hz. The polarity of the comparator (noninvert.) and of the opamp (invert.) is selected as follows: In the event of a Power-On Reset, the TVC takes the THIO line "L", whereas TMO is "H". The above polarity must be observed to ensure that no current is applied to the motor during the POR pulse period. To avoid the

adverse conditions that would be applied to the motor in the event of the loss of the 5V supply a separate reference divider is provided for the comparator section. Both outputs of the L2722 are now "common-mode" in the event of the above mentioned failure.

6. Tape end - LED - control :

The LED current is controlled by transistor 7404. The ON time is approx. 1 ms. with an ON/OFF ratio of 0,09. C2404 slightly attenuates the slopes to avoid interference in the signal electronics. The LED current is at least 75 mA and supplied by the +14M1.

7. Analogue interface to the TVC :

The following analogue levels are supplied to the TVC internal A/D-C :

TRIV	Tracking information Video
TAE/TAS	Tape end/Tape Start Detection
I/R	combined information from INIT and Record protection
AGC	Automatic Gain Control

8. Test picture generation for non TXT equipment

By means of the resistor network R3426, R3425, R3424, R3422 and the corresponding selection of lines IOFP and FFP by the TVC, the levels (Sync, black, white) for a test picture can be generated and inserted in the signal path by the signal processing IC (7051)

9. Sensing of the tape deck switch :

The contains two switches :

INIT	initialisation switch
RECP	record protection

The states of these two switches is input with a single line (I/R) into an analogue input of the TVC (pin 57). Each switch output, the level of which can be "H" (5V) or "L" (OV),is coupled via a resistor-driver network. Each possible switch combination then provides a unique voltage level on the I/R line.

10. Version definition :

Only one ROM mask is used, therefore it is necessary to define the wanted version.

Pin 1	Longplay
Pin 24	2 or 3 Kopf (head amplifier)
Pin 36	4 head yes/no (not N4
Pin 55	Pal 1 (VHF/SEC-LP (not N4)

11. 12 V supply (N4) :

The output voltage is specified with 12 V + 1.0/0.6V for a maximum load current of 400 mA. To ensure an uniform current division between the two series pass transistors BC636 (T7423, T7424) connected in parallel, a 11 Ω resistor is connected in series with each emitter. This reduces the effect of tolerances and temperature drift on the base emitter voltages. The circuit is short circuit protected, after a short circuit of the output voltage, reset has to be carried out by temporarily removing the mains plug. In this case, the electrolytic capacitor 3431 charges to start the circuit.

12. EE - Prom :

An EEPROM is an electrical not volatil ROM, on which it is possible to save and delete information. The information is not lost if the mains is disconnected. The R/W cycle takes place as usual via the serial IIC-Bus SDA, SCL. It is now possible to save specific deck parameters, for example, X-distance, gap position, tuning limits (for Amtsblatt requirments) and possible also differences between TAE and TAS; left and right tolerance of the tape end light barrier (until now coupled photo transistor were used). The preset potentiometer for the gap position is no longer necessary. The adjustment occurs automatically when using a test cassette and pressing certain keys. The preset channels and some options are also saved in the EEPROM.

13 . CMT - detection :

The CSYNC wire is connected with two TVC pins. One off this pins detects the 50 Hz (Pin 12 Port 33) and the other detects the 15,625 kHz (Pin 8 Port 47).
This is necessary to recognice video signals only and not other 50 Hz transmitter signals.

CSP - BOARD (N3/4/5)

Recording :

The CCVS signal (VBS) from the " IN/OUT" circuit stage is fed through the solder connection 0201 pin1 and the emitter follower T7240 to a stage for chroma selection (Q5102 / T7200). The selected chroma signal then passes through the trap circuit (L5203 / C2201 / L5204 / C2203 / R3206) to arrive at IC7520 pin25. The trap circuit increases the selective effect of the "gaussian filter circuit" (Q5102) . Subsequently, the signal passes through a 15 dB amplifier and is then taken via pins 23 and 22 to a limiting amplifier with a following frequency divider. Dividing the chroma signal in a ratio of 1:4 this divider generates the necessary 1.1 MHz signal for recording which is applied to pin 19 of IC7520. The bandpass which follows then reduces the harmonics resulting from the frequency division and the signal is routed to pin 17 of IC7520. Afterwards it is subjected to a 10 dB amplifier and switched to pin 13. Between pin 13 and 12 the 1.1 MHz signal is fed through an "antigaussian filter circuit" (Q5207). The signal is limited then in IC7520 and passed via pin 15 and the solder connection 0202-1101 pin6 to the Video/Chroma circuit stage (Family Board) as "CHRS"- signal. It is then fed through an adjustment control for the SECAM chroma recording current, R3098 (CHROMINANCE WRITING CURRENT SECAM) to the junction R3098 i R3100 where the signal is added to the Y-signal. The sum signal (FMRV) is taken via the amplifier stage T7029 / T7030 and plug contact 1911 pin2 to the head amplifier.

Control of the switches in IC7520 :

On recording, a LOW level (0.7V) is present at the collector of the transistor T7205. This transistor works like a diode, turns on and applies approximately 1.3V to IC7520 pin21. From this level. the following detection stage can identify the recording mode and switches all in circuit switches to record position. 3.2

Playback :

On playback, the "uncontrolled FM signals from the tape" (FMPV) is taken to pin 21 of the IC7520 and is then amplified by 6 dB. From pin 19, the signal is fed via a bandpass to IC7520 pin17. Between pins 17 and 16, the obtained 1.1 MHz signal passes through a 10 dB amplifier; via pin 14, it is fed to another amplifier in IC7520 whose feedback stage contains an "anti-gaussian filter circuit (Q5207)" which is connected between pin 12 and pin 14. In the AGC stage following the amplifier the signal undergoes an automatic gain control (AGC) and its frequency is doubled (2.2MHz) in the fullwave rectifier RECT. From IC7520 pin8 the 2.2 MHz signal is fed to the bandpass F5211 which removes disturbing harmonics from the wanted signal. In another doubling stage which obtains the 2.2 MHz signal from IC7520 pin6 a 4.4 MHz signal is generated. This signal is subsequently amplified by 10 dB and is fed to the colour killer via pin 27, the anti-gaussian filter circuit (Q5202) and pin 28. From IC7520 pin1 the 4.4 MHz signal is fed into the bandpass F5209 which separates disturbing harmonics from the wanted signal. The resulting SECAM chroma signal (CIN) is taken via the impedance converter T7203 and the solder connection 0203 pin2 / 1101 pin8 to t he Video/Chroma circuit stage (Family Board) and is then added to the CVS-signal in IC7051.

IN/OUT - I/O, MSIO (N3/5)
(INCLUDING SUBPRINT MSIO)

The I/O circuit selects the different signal sources. Audio and video signals are switched by ICs (HEF 4053). Switching is controlled by the ESPBH line and on MSIO by ES2. Scart 1 video input signal VIN1 from pin 20 is passed by the switching diode (pos 6565, 6566) to pins 5 and 2 of IC7590 on MSIO.
From pin 5 it goes via pin 4 and T7560 to Video out on Scart 2. From pin 2 via pin 15, video VE12 returns to IC 7592 at pin 1 and via pin 15 is passed to the signal electronics section as VBS. Scart 1 audio inputs from pins 2 and 6 (left and right channel) are added to AIN1 and fed to pins 5 and 2 IC7591 on MSIO.From pin 5 it goes via pin 4 and T7580 to Audio out on Scart 2. From pin 2 via pin 15 audio AE12 returns to pin 13 of IC 7592 and is output at pin 14 as AMLR the audio part.
The Front end video VFV comes from pin 7 IC7720 via an attenuator and an emitter follower on the front end to pin 3 IC7590 on MSIO and then goes to Video out on Scart 2 via pin 3 and T7560. VFV returns as VTX to pins 2 and 5 IC7592. From pin 2 it is passed via pin 15 as VBS to the signal electronics section.
From pin 5 it is switched via pin 4 to a pull up resistor. The Front end audio output signal AFV from pin 8 IC 7840 on the front end goes to pin 12 IC7592 and via MSIO to pin 3 IC7591. From pin 12 IC7592 it goes via pin 14 to the audio section as AMLR. On MSIO pin 3 IC7591 can be connected through via pin 4 and an emitter follower to Audio out on Scart 2. Scart 2 video input signal on MSIO is passed via switching diodes to pin 1 and pin 13 IC 7590. From pin 1 via pin 15 VE12 goes the same way as described previously.
From pin 13 it can be connected through via pin 14 as VOUT1 to pin 19 of Scart 1. Scart 2 audio inputs from pin 2 and 6 (left and right channel) are added to AIN2 and fed to pins 13 and 1 of IC7591 on MSIO. From pin 13 it arrives via pin 14 and T7540 as AOUT1, Audio out on Scart 1. From pin 1 via pin 15 audio AE12 goes the same way as described previously. Video signal VSB from signal electronics goes via MSIO as VIDOUT out to the modulator section. Also VSB at MSIO is passed via an attenuator, the emitter-follower 7509 to pin 12 IC7590. From pin 12 it can be connected via pin 14 as VOUT1 to Scart 1. VPS-Option : In this case VSB is also fed to IC7600 SDA 5642 where data from line 16 is detected and sent via IIC bus to the controller. Audio signal ALMP from the audio section is passed directly to the modulator. It is also passed to pin 12 IC7591 on MSIO and leaves via pin 14 as AOUT1 to Scart 1. There is also RGB loop through between Scart 1 and Scart 2. The linking of pin 16 (blanking) between Scart 1 and Scart 2 can be switched by T7550 using control signal SCRTV. Pin 8 (switching) of Scart 1 is controlled by 8SC1. Pin 8 (switching) of Scart 2 is controlled by 8SC2. Zener diodes are used at all inputs for ESD protection, the capacitors are "Amtsblatt" requirements.

I/O, TXT - BOARD MVIO (N3/5)

1. Controller (pos. 7000) :

The controller consits of a 8032 micro processor with external 128K x 8 OPTROM and 8K x 8 RAM. The address lines to Port 0 are latched as this port supports both address and data lines. As the 8032 only supports 16 pins for address control, the highest address A16 must be generated with a "normal" Portpin. An RC circuit is used to provide a timing safeguard between the use of A16 pin as an address and as a data pin.
The control processor is linked via the I^2C-Bus with the display µP and trough the UART-bus, in the shift register mode, with the deck-µP. For operational speed the control processor triggers the display processor via the interrupt line (INT).
Operating in a high speed mode the controller runs all other I^2C-Bus functions including the teletext decoder (SAA5246AGP/E).
All non volatile data as for example programme data, source codes, preferred pages, etc. are saved in a 1K x 8 EEPROM on the familyboard.

2. Integrated Video-Processor and Teletext decoder (pos. 7200) :

Within the processor, 27 MHz oscillation from the colpitts oscillator, is divided down to provide the teletext data clock of 6.93 MHz the display timing and the line frequency 15625 Hz.
The data slicer separates the teletext information from the vertical blanking interval of the video signal. The teletext data is saved in the RAM and if required converted to RGB signals in the display generator. The amplitude of the RGB signals is fixed by an external voltage divider. These RGB signals are encoded to a CVBS signal.
Using the line pulse the teletext controller generates artificial Syncs for the TV (STTV). This STTV is not interlaced during full page-mode (312/312 lines). In subtitles-mode, due to association with the background picture, it is interlaced (312,5/312,5).
The BLANK output indicates at what time a teletext information is available. BLANK gives the opportunity to fade subtitles.
In order to increase the access speed of new page selection the teletext controller saves in the RAM a total of 4 or 8 pages depending on the method of execution.

3. Colour encoder (pos. 7300) :

TV sets which are equiped with teletext, drive the colour picture tube from TXT-RGB signals. As VCRs do not normally provide an RGB output, and some TV sets are not provided with RGB input, a CVBS signal must be generated.
The colour encoder (MC1377) encodes this CVBS from the RGB signals, a Composit Sync. (STTV) and a 4.43 MHz oscillation (FSC). This colour subcarrier is brought into correct phase by shift circuit.
The H/2 correction results from the selective amplification of a sample of the subcarrier-PLL in the signal electronics. The coil is not adjusted to the maximum amplification but for correct phase. With this generated H/2 sinewave, the encoder is synchronised via a transistor.

4. Video insertion and switching (pos. 7400) :

For video insertion, the video switch BA7605N is used to clamp all the input signals to 2.0V and all the output signals to 0.6 V Sync tip. The frontend video VFV and the teletext information are offered with 1 V_{pp} to one of the 2 switches (on pin 8 and pin 10). The modified BLANK pulse inserts subtitles when available. This VTX signal is then fed to the signal electronics for recording or monitor. In case of Full page-mode the switch is blocked by FP line. For subtitles during MESECAM-standard transmissions the FP-PAL line activates a chroma bypass and turns the FSC off.
The output of the signal electronics VSB (on pin 1) and the teletext information ($2V_{pp}$ on pin 3) are connected to the second switch. This switch is directly controlled by the Full-page line (FP).

5. I/O section :

The I/O section is composed of 2 triple HEF switches; pos. 7590 for the video signals and pos. 7591 for the audio signals.
The control of these switches is by the 2 lines ES-2 (external source) and SCRTV (scrambled TV).
In order to reduce the control lines, ES-2 and SCRTV each carry out two functions.

If an ext. source is chosen (E1 or E2), ES 2 selects either SCART-1 IN or SCART-2 IN, it also selects either the front end signal or the SCART-1 input signal to pass to the SCART-2 output.
SCRTV has the function in the decoder mode to connect the SCART-2 input to the SCART-1 output, and also permits the passive RGB-loop of through the blanking signal between SCART-2 and SCART-1.

6. VPS :

If the teletext decoder SAA5246 is exchanged with its substitute SAA5248, VPS will also ba available. The SDA5642 is provided as backup solution.

NFM PANEL (N4)

1. Playback :

Lines SOFT1, SOFT2 and TAPE control the focus of the video picture during playback by influencing the FM processing frequency response.
TAPE is active (high) with tapes with a high playback amplitude (high TRIV signal) and increases the resolution by activating T7205 and T7206.
This occurs in such instances as with SVHS tapes on which VHS signals have been recorded.
SOFT2 is active (high) with tapes with a low playback voltage and switches the picture one step "softer" with T7203.
SOFT1 is active (high) during LP playback and also switches the picture one step "softer" with T7104.

2. Recording :

When recording, lines SOFT1, SOFT2 and TAPE control an 8-stage attenuator (T7200, T7201, T7202), which provides "automatic write current optimisation" (optional).
The FMRV write current is written and read at 8 different levels (40 ms) when the tape is threaded and stationary.
The TRIV signal is measured during reading and the write current that achieves the highest playback amplitude is established.
This process is carried out 4 times. The optimum write current setting is stored once the results have been averaged out.

NIO - BOARD (N4)

Description of function :

General :

The fact that the family board can be used universally means that the input and output selection switches have to be split between the NFB4 and the N10. The various control line outputs are made by shift register 7413.

Input selection switch :

The front sockets, the front end and SCART1 / SCART2 are selected using selection switch 7592 (NFB4). The relevant control lines are IS1 and IS2. The selection of either SCART1 or SCART2 is done at the NIO by control line ES1 with ICs 7590 and 7591. The video signal selected (VBS) is now routed to the signal electronics section and the audio signal selected (ALMR) to the lin. audio section.

SCART2 output

Control line ES2 and ICs 7590 and 7591 at the NIO are used to determine whether the front end signal or SCART1-In should be at SCART2-Out.

OSD (optional)

The OSD information is overlaid onto the output signal in the signal electronic section (VSB) at the NIO. The signal is then known as VIDOUT.

SCART1 output

The SCRTV control line and ICs 7590 and 7591 (NIO) are used to determine whether SCART2-In or the output signal from the signal electronics section should be at SCART1-Out. The output signal from the signal electronics section can either be the playback signal or, if the signal electronics section is located in the look-through, the VBS signal (see Item 2).

MOD-out

The modulator signal is the output signal from the signal electronics section including the OSD information (VIDOUT).

16:9 (optional)

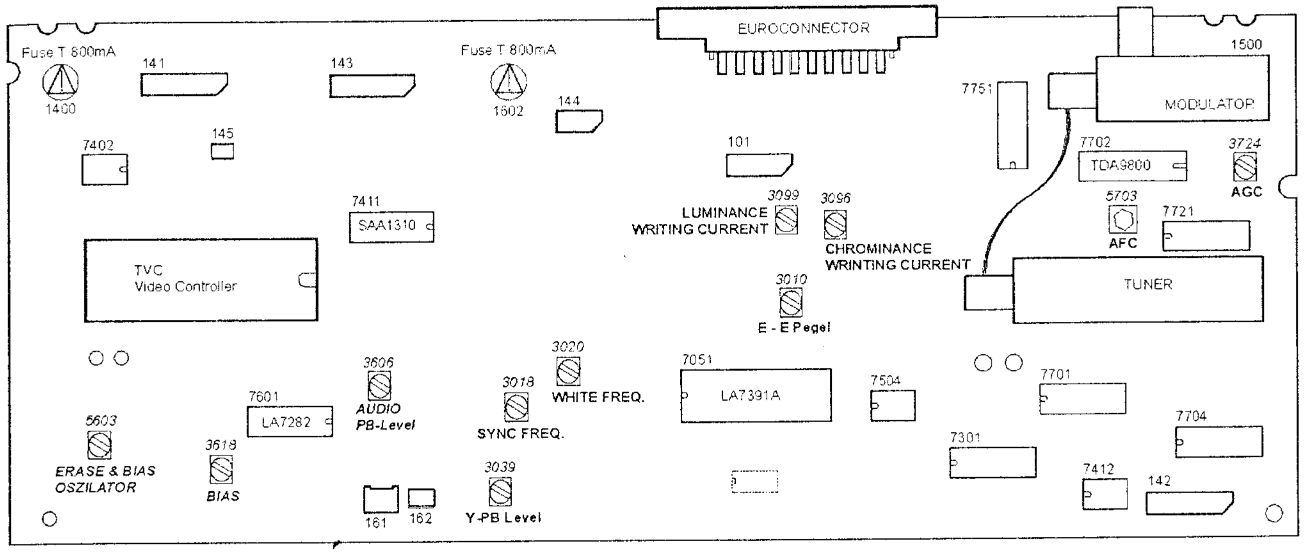
Control line 8SC1 switches pin 8 on SCART1 via transistors 7502 and 7501. Control line SC1HL along with transistor 7503 and Z diode 6505 determines whether the power output should be 6V or 12V.

Follow me (optional)

The video signal from the internal front end of the VCR (VFV) and the video signal from the television set connected to SCART1-in (VIN1) are digitised via comparators and then compared with one another. Low at the circuit output means that the picture contents from the two video signals are identical and that they must come from the same transmitter.

ADJUSTMENTS

Family Board N1/2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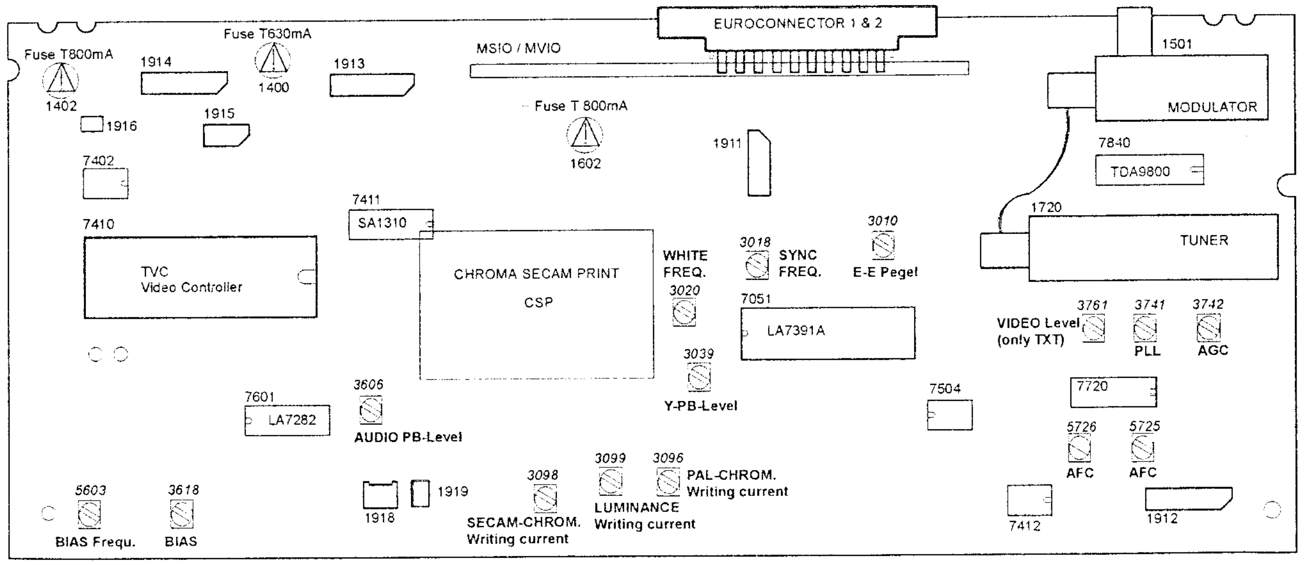
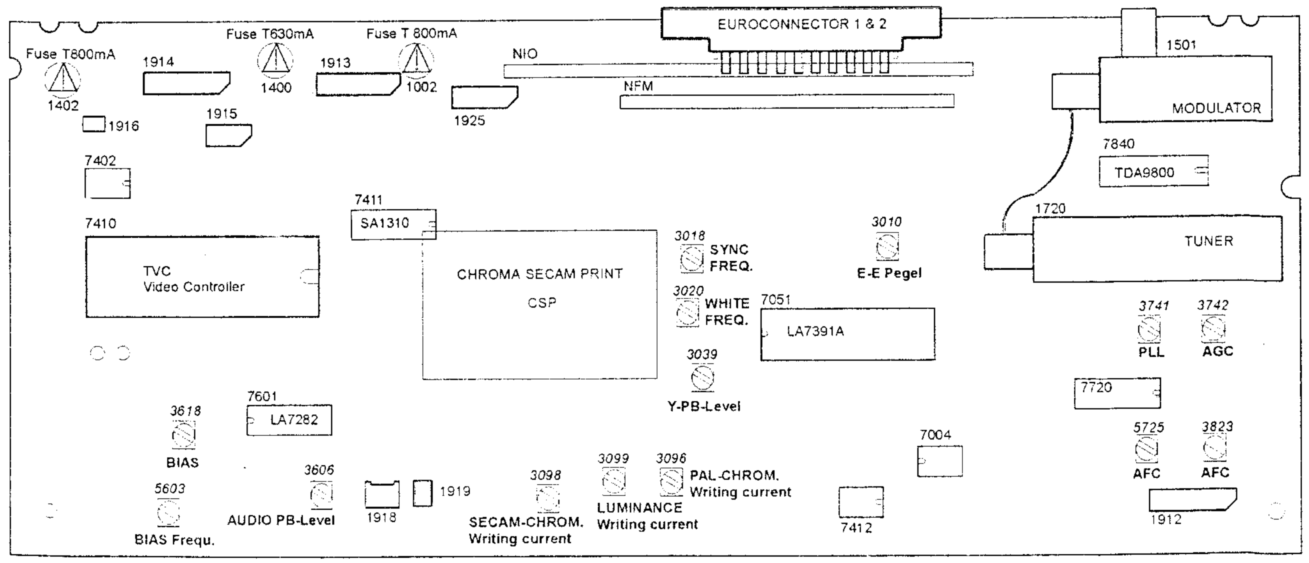
Fuse T 800mA
1400
141
143
Fuse T 800mA
1602
144
1500
MODULATOR
7751
7402
145
101
7702
TDA9800
3724
AGC
7411
SAA1310
3099
LUMINANCE
WRITING CURRENT
3096
CHROMINANCE
WRINTING CURRENT
5703
AFC
7721
TVC
Video Controller
3010
E - E Pegel
TUNER
3606
AUDIO
PB-Level
3020
WHITE FREQ.
3018
SYNC FREQ.
7051
LA7391A
7504
7701
7601
LA7282
5603
ERASE & BIAS
OSZILATOR
3618
BIAS
3039
Y-PB Level
161
162
7301
7704
7412
142

Family Board N3/5:


EUROCONNECTOR 1 & 2
Fuse T800mA
1402
1914
Fuse T630mA
1400
1913
MSIO / MVIO
1501
MODULATOR
1916
1915
Fuse T 800mA
1602
1911
7402
7840
TDA9800
7411
SA1310
7410
TVC
Video Controller
CHROMA SECAM PRINT
CSP
WHITE
FREQ.
3020
3018
SYNC
FREQ.
3010
E-E Pegel
1720
TUNER
7051
LA7391A
3761
VIDEO Level
(only TXT)
3741
PLL
3742
AGC
3039
Y-PB-Level
3606
AUDIO PB-Level
7601
LA7282
7504
7720
5726
AFC
5725
AFC
5603
BIAS Frequ.
3618
BIAS
1918
1919
3098
SECAM-CHROM.
Writing current
3099
LUMINANCE
Writing current
3096
PAL-CHROM.
Writing current
7412
1912

Family Board 4:


EUROCONNECTOR 1 & 2
Fuse T800mA
1402
1914
Fuse T630mA
1400
1913
Fuse T 800mA
1002
NIO
NFM
1925
1501
MODULATOR
1916
1915
7402
7840
TDA9800
7411
SA1310
7410
TVC
Video Controller
CHROMA SECAM PRINT
CSP
3018
SYNC
FREQ.
3020
WHITE
FREQ.
7051
LA7391A
3010
E-E Pegel
1720
TUNER
3741
PLL
3742
AGC
3039
Y-PB-Level
7720
3618
BIAS
7601
LA7282
5603
BIAS Frequ.
3606
AUDIO PB-Level
1918
1919
3098
SECAM-CHROM.
Writing current
3099
LUMINANCE
Writing current
3096
PAL-CHROM.
Writing current
7004
7412
5725
AFC
3823
AFC
1912

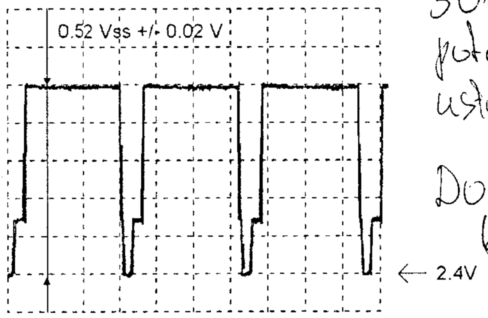
Stojanie megzelowo

VIDEOSIGNALPROCESSING :

1. E-E level (3010) :

- Connect a pattern generator and apply a 100% white
- picture to the Euroconnector (programme E1).
- Select 'Stop' mode.
- Connect an oscillocope to Pin 4 of IC7051.
- Adjust resistor 3010 until the amplitude of the output voltage is 0.52 $V_{pp} \pm 0.02$ V_{pp} (Fig.1).
- Check that the voltage at the connector Scart1 pin 19 1,9 V_{pp} ± 0.1 V_{pp}.

A: DC, 0.1 V/Div 20us/Div



Scart Pin 19

3010
potaech
ustawiany

Do euro obr
bieli

Fig. 1

2. Sync frequency (3018) : SYNCHR w RAP.

- Select 'record' mode.
- Apply no signal (programme E1). do oscyloskopu
- Connect a frequency counter to the 'video current test pin' (MP1) on the head amplifier.
- Adjust resistor 3018 until the frequency counter indicates 3.800 MHz ± 10 kHz. reguluj

3. White frequency (3020) :

Before carrying out this adjustment, check point 1 and 2.

- Connect a pattern generator and apply a 100% white picture.
- Select 'record' mode.
- Connect an oscilloscope to the 'video current test pin' (MP1) on the head amplifier. Zapis
- Adjust resistor 3020 until the frequency counter reads 4.600 MHz ± 10 kHz. potem ustawiamy

4. Writing current adjustment :

N1/2 : Adj. R3099 and R3096 balancing jointly !
N3/4/5 : Adj. R3099 and R3096 and R3098 balancing jointly !

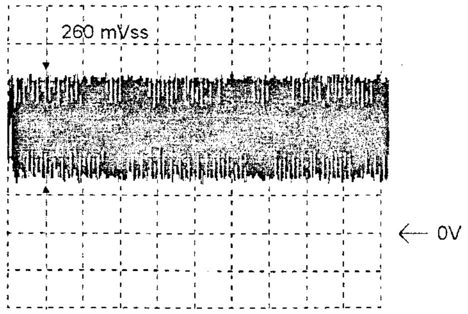
luminancji
AMPL 260 mV LP-230

4.1 Luminance writing current adjustment (3099) : zapis

- Select 'record' mode.
- Connect an oscilloscope to the 'video current test pin' (MP1) on the head amplifier.
- Apply no signal (programme E1).
- Adjust resistor 3099 for a signal amplitude of (Fig.2) :
- 260 mV_{pp} standard play sets (2/0, 3/0)
- 230 mV_{pp} longply sets (4/0, 2/0LP)

Odtwarz
Euro

A: DC, 0.1 V/Div 20us/Div



TESTPIN TP1
(Headamplifier)

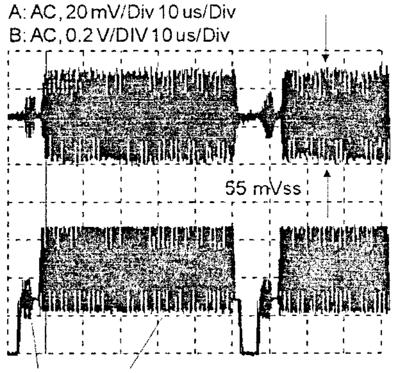
Fig. 2

4.2 PAL Chrominance writing current adjustment (3096) :

- Select 'record' mode.
- Connect an oscilloscope to the 'video current test pin' (MP1) on the head amplifier.
- Connect a pattern generator and apply a red (75%) signal (Burst:Chroma = 1:2,2) to the Euroconnector (programme E1).
- Connect pin 40 of IC7051 to + 5V.
- Adjust resistor 3096 for a signal amplitude of :
  55 mVpp standard play sets (2/0, 3/0)
  49 mVpp longply sets (4/0, 2/0LP)
  (Fig. 3) (-13.5 dB relative to the luminance signal)

RED

A: AC, 20 mV/Div 10 us/Div
B: AC, 0.2 V/DIV 10 us/Div



Burst : Chroma = 1 : 2.2

Fig. 3

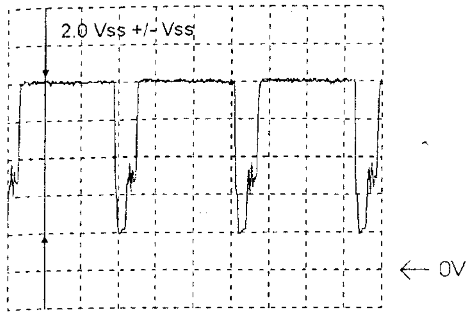
4.3 SECAM Chrominance writing current adjustment (3098) (only N3/4/5) :

- Select 'record' mode.
- Connect an oscilloscope to the 'video current test pin' (MP1) on the head amplifier.
- Connect a pattern generator and apply a secam red signal to the Euroconnector (programme E1).
- Connect pin 40 of IC7051 to + 5V.
- Adjust resistor 3098 for a signal amplitude of :
  35 mV_{pp} standard play sets (2/0, 3/0)
  31 mV_{pp} longply sets (4/0, 2/0LP)
  (Fig. 4) (-17.4 dB relative to the luminance signal).

5. Luminance playback level (3039) :

- Play a 100% white picture from a cassette.
- Connect an oscilloscope to connector scart pin 19. Euro
- Adjust resistor 3039 until the amplitude of the output signal is 2.0 V_{pp} ± 0.1 V_{pp} (Fig. 4).

A: DC 0.5 V/Div 20 us/Div



SCART PIN 19

Fig. 4

FRONT END (N1/2)

1. Adjustment of the video demodulator (5703) :

- Apply on tuner pos. 1720 Pin 17 100 mV_{eff} 38,9 MHz.
- Adjust with demodulator coil 5703 on Pin 15 IC 7702 2,5 V ± 0,2 V DC.

[illegible]

2. Adjustment of the RF-AGC (3724) :

- Supply a PAL white picture with an amplitude of 2,2 mV_{eff} (67 $dB_{\mu V}$) with sound carrier but without ton modulation.
- Connect an oscilloskope to tuner 1701 pin 17.
- Adjust with 3724 on 550 mV_{pp} +50 mV/-0 mV.

3. Adjustment of the tuning limits :

(only for Amtsblatt requirements)

- Erase the EEPROM.
- Remove the mains supply and press WIND, REWIND and DOWN simultaneously and while the keys are held down reconnect the mains supply.
- Select SERVICE mode.Press approx. 5 sec. STOP on RC and PLAY on the recorder.
- Connect a pattern generator with colour bar and adjusted for channel E2 (48,25 MHz).
- Aktivat channel search until the recorder has found the channel.
- Press STOP on RC and REWIND on the recorder.Storing the lower tuning limit.
- Adjust pattern generator for channel E69 (855,25 MHz).
- Aktivat channel search until the recorder has found the channel.
- Press STOP on RC and WIND on the recorder.Storing the upper tuning limit.
- Adjust pattern generator for channel S22 (311.25 MHz).
- Aktivat channel search until the recorder has found the channel.
- Press STOP on RC and RECORD on the recorder.Storing the upper tuning limit Band III.
- Switch the set to STAND BY.

FRONT END (N3/4/5)

1. AFC-adjustment (5725) :

- Supply via a 22 nF capacitor a 38.9 MHz sinewave signal with 100 mV_{eff} to pin 17 of tuner 1701
- Connect a voltmeter to IC7720 pin 15.
- Balance to 2,5 V ± 0,1 V by means of coil 5725.

2. AFC-adjustment for SECAM und MULTISTANDARD sets :

N3/5 : coil 5726
N4 : resistor 3823

- Supply via a 22 nF capacitor a 33.9 MHz sinewave signal with 100 mV_{eff} to pin17 of tuner
- Connect signal PSS (plug 1912 pin 1) to ground (Secam aktive)
- Connect signal SB1 (plug 1912 pin 5) to ground (Band 1 aktive)
- Connect a voltmeter to IC7720 pin 15.
- Balance to 2,5 V ± 0,1 V by means of coil 5726 (N4 ; resistor 3823).

Carry out the 5725 and 5726 balancing jointly ! (only N3/5)

3. PLL signal to noise ratio for SECAM und MULTISTANDARD sets (3741) :

- Supply a PAL picture with sound carrier but without ton modulation.
- Connect an oscilloskope to plug 1591 pin 16 (AMLP).
- Adjust to minimum amplitude by means of 3741.

4. Rf-AGC adjustment (3742) :

- Supply a PAL white picture with an amplitude of 2,2 mV_{eff} (67 $dB_{\mu V}$) with sound carrier but without ton modulation.
- Connect an oscilloskope to tuner 1701 pin 17.
- Adjust to 550 mV_{ss} +50mV/-0mV by means of 3742.

5. Adjustment of the video output level (3761) (N3/5):

(only for teletext sets)

- Apply a standard video signal to the aerial input.
- Connect an oscilloskope to emitter of E- 7761.
- Adjust resistor 3761 for output voltage 0,9 Vss ± 0.05 V.

LINEAR AUDIO

1. Setting of the erasing frequency (5603) :

- Bring unit into mode "RECORD".
- Connect frequency meter to resistor 3618.
- Set erasing frequency to 70 kHz ± 2,5 kHz with 5603

2. Setting of the bias current (BIAS) (3618) :

- Connect millivoltmeter to 3618 (differential measurement)
- Bring unit into mode "RECORD"
- Set voltage at 3618 to 16 mV_{eff} (70 kHz) with 3618.

Checking the bias setting :

After "BIAS" has been set with the indicated approximate value, make a music recording with linear audio alone. Use cassettes made by well-known manufacturers, but do not use chromium dioxide tape. When reproducing this recording, note whether the highs are sufficiently reproduced or whether the sound is not subject to distortion. If the share of the highs is not sufficient, the "BIAS" current must be reduced; if distortion is too great, it must be increased.

3. Playback - amplitude setting (3606) :

- Record a signal 500 mVeff, 1 kHz.
- Connect millivoltmeter to the Scart1 pin1 (audio output). Reproduce this recording
- Set the playback amplitude to 500 mV_{eff} ± 50 mV with 3606

DECKELECTRONIC :

Software adjustment of the GAP :

- Insert a test cassette with norm video signal (for ex. 4822 397 30103)
- Select SERVICE mode. (press approx. 5 sec. STOP on RC and PLAY on the recorder
- Press PLAY on RC and EJECT on the recorder.

Thereby the automatical adjustment is released and stored in the EEPROM.
If the adjustment has been successfuly done, the recorder gets automatically in STAND BY mode.
If the adjustment has not been made correctly, the recorder rejects the cassette.

Reasons: The norm-video signal is out of order
Bad scanner
Microprocessor is defect.

POWER SUPPLY MSM, NSM

Adjustment of the output voltage.

MSM1 :	3204
NSM :	3090

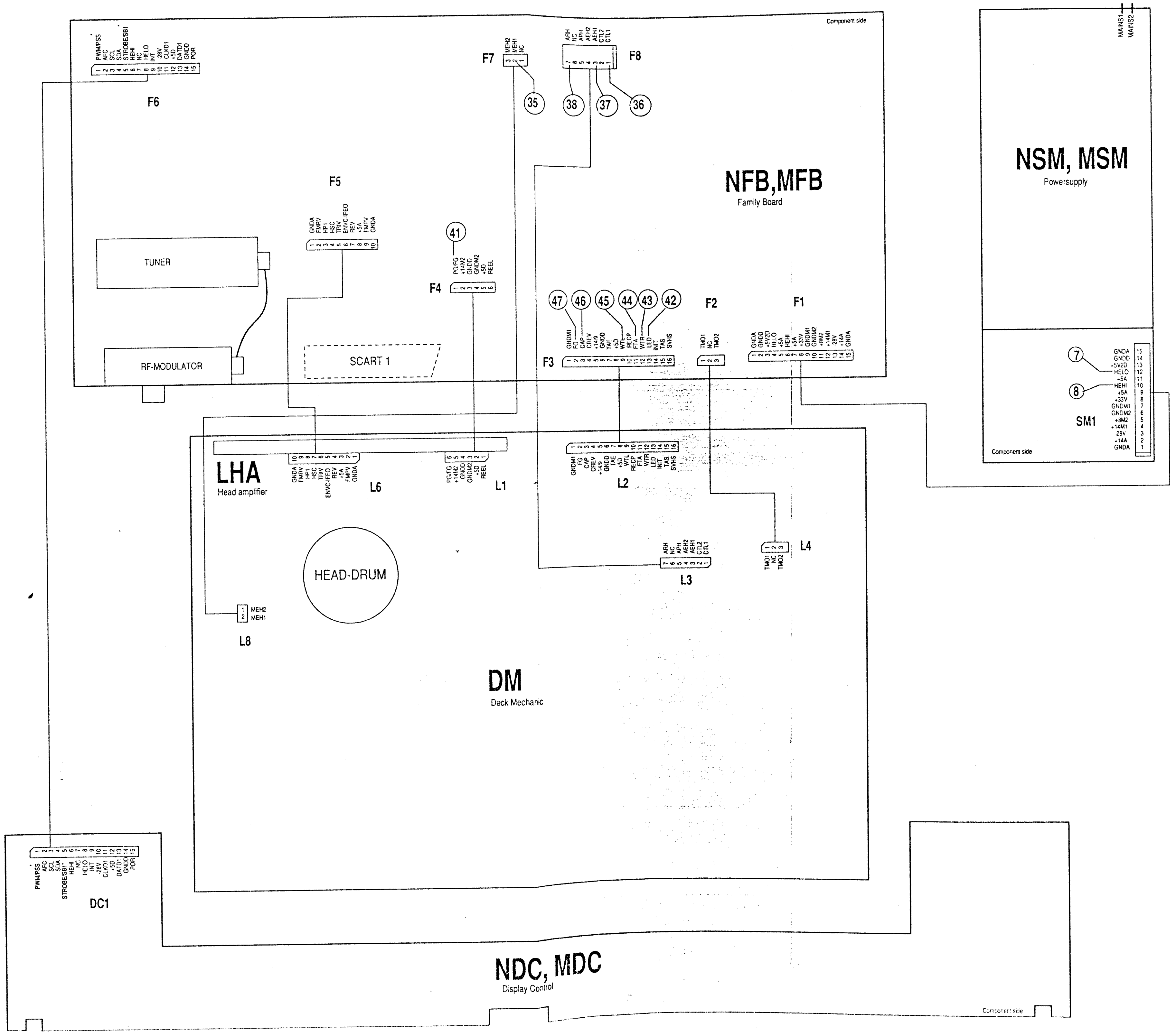
- Connect a voltmeter to connection 9 or 11 of the plug SM1
- Adjust to an output voltage of 5,4 V ± 0,03 V .

MDC., NDC ADJUSTMENTS :

Setting the clock frequency (2005) :

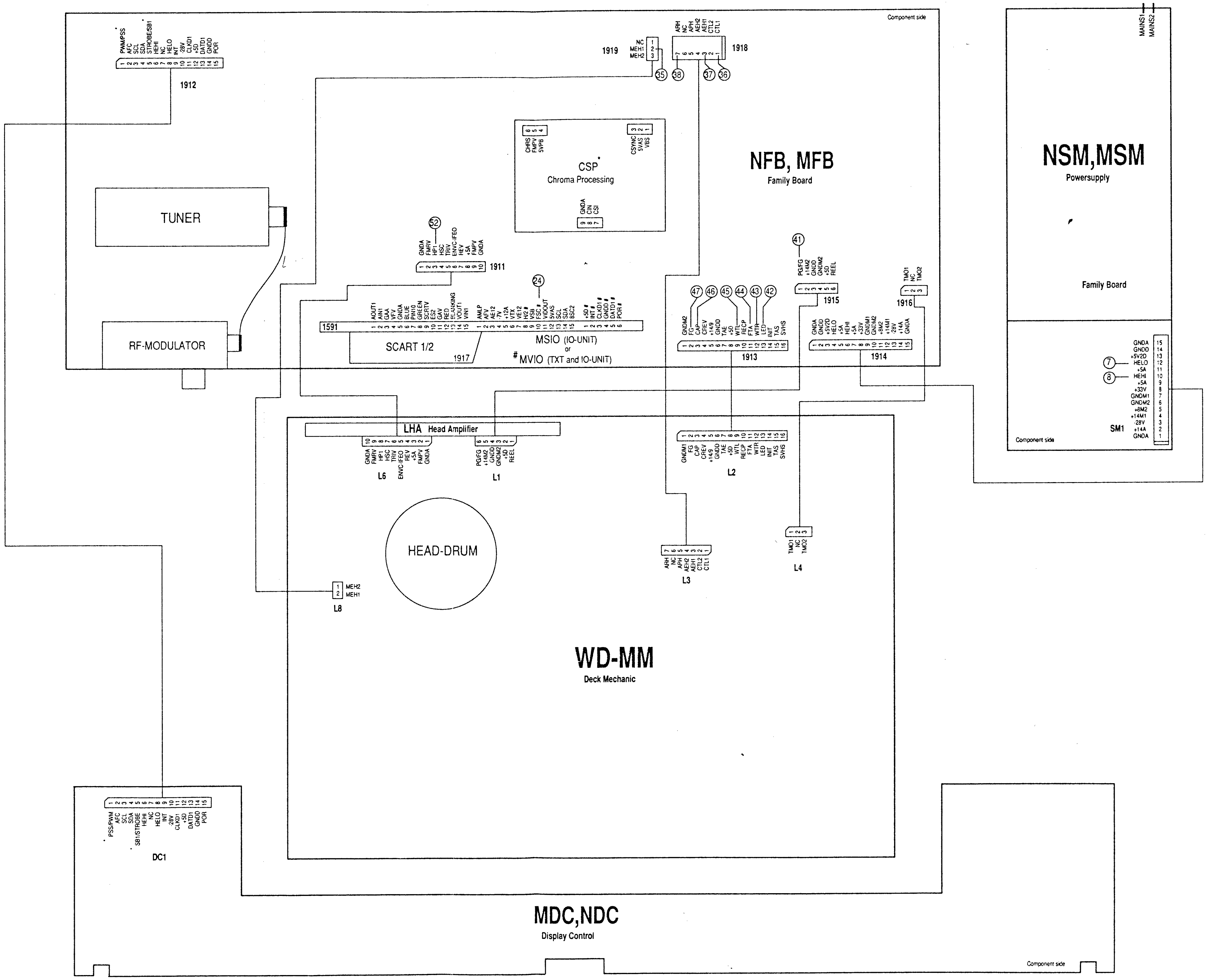
- Disconnect the set from the mains.
- Connect a frequency counter to plug 1101 pin 1.
- Press the keys UP, DOWN and PLAY simultaneous.
- Connect the set to the mains.
- Touch pin3 plug 1101 at least 7 times with the earth cable.
- A 5 V squarewave signal has been applied to the frequency counter.
- Set C2005 at 47.36328 ms ± 75 ns.

WIRING DIAGRAM N1 N2


Component side
NFB,MFB
Family Board
F6
1 PWM/PSS*
2 AFC
3 SCL
4 SDA
5 STROBE/SB1*
6 HEHI
7 NC
8 HELO
9 INT
10 -28V
11 CLKD1
12 +5D
13 DATD1
14 GNDD
15 POR
F7
3 MEH2
2 MEH1
1 NC
F8
7 ARH
6 NC
5 APH
4 AEH2
3 AEH1
2 CTL2
1 CTL1
35
38
37
36
F5
1 GNDA
2 FMRV
3 HP1
4 HSC
5 TRIV
6 ENVC-IFEO
7 REV
8 +5A
9 FMPV
10 GNDA
41
F4
1 PG/FG
2 +14M2
3 GNDD
4 GNDM2
5 +5D
6 REEL
TUNER
RF-MODULATOR
SCART 1
47
46
45
44
43
42
F3
1 GNDM1
2 FG
3 CAP
4 CREV
5 +14/9
6 GNDD
7 TAE
8 +5D
9 WTL
10 RECP
11 FTA
12 WTR
13 LED
14 INIT
15 TAS
16 SVHS
F2
1 TMO1
2 NC
3 TMO2
F1
1 GNDA
2 GNDD
3 +5V2D
4 HELO
5 +5A
6 HEHI
7 +5A
8 +33V
9 GNDM1
10 GNDM2
11 +8M2
12 +14M1
13 -28V
14 +14A
15 GNDA
NSM, MSM
Powersupply
MAINS1
MAINS2
7
8
SM1
15 GNDA
14 GNDD
13 +5V2D
12 HELO
11 +5A
10 HEHI
9 +5A
8 +33V
7 GNDM1
6 GNDM2
5 +8M2
4 +14M1
3 -28V
2 +14A
1 GNDA
Component side
LHA
Head amplifier
L6
10 GNDA
9 FMRV
8 HP1
7 HSC
6 TRIV
5 ENVC-IFEO
4 REV
3 +5A
2 FMPV
1 GNDA
L1
6 PG/FG
5 +14M2
4 GNDD
3 GNDM2
2 +5D
1 REEL
L2
1 GNDM1
2 FG
3 CAP
4 CREV
5 +14/9
6 GNDD
7 TAE
8 +5D
9 WTL
10 RECP
11 FTA
12 WTR
13 LED
14 INIT
15 TAS
16 SVHS
HEAD-DRUM
L3
7 ARH
6 NC
5 APH
4 AEH2
3 AEH1
2 CTL2
1 CTL1
L4
1 TMO1
2 NC
3 TMO2
L8
1 MEH2
2 MEH1
DM
Deck Mechanic
DC1
1 PWM/PSS*
2 AFC
3 SCL
4 SDA
5 STROBE/SB1*
6 HEHI
7 NC
8 HELO
9 INT
10 -28V
11 CLKD1
12 +5D
13 DATD1
14 GNDD
15 POR
NDC, MDC
Display Control
Component side

*... SIGNAL USED FOR SECAM SETS

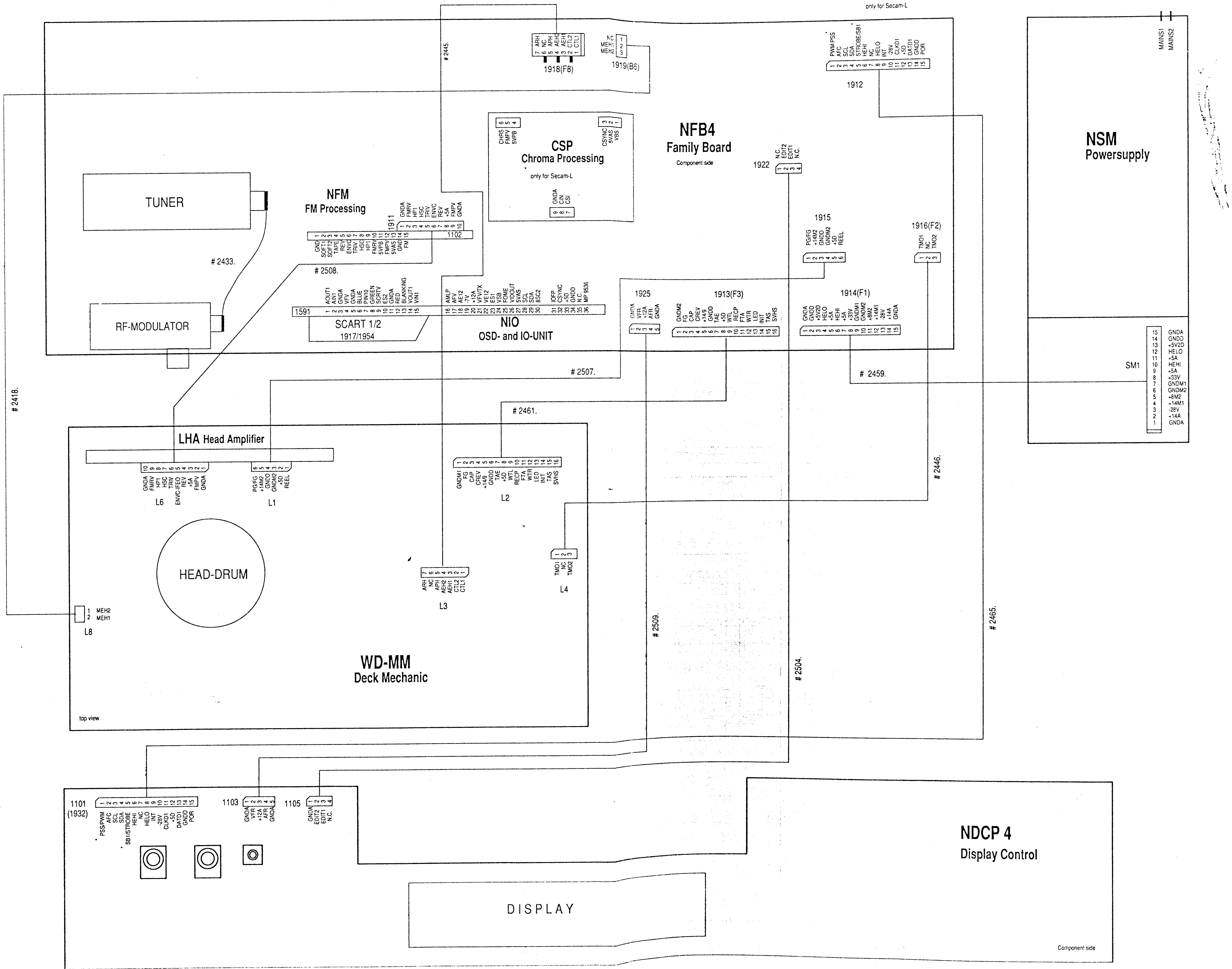
WIRING DIAGRAM


NFB, MFB
Family Board
Component side
1912
PWM/PSS AFC SCL SDA STROBE/SB1 HEHI NC HELO INT -28V CLKD1 +5D DATD1 GNDD POR
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
1919
NC MEH1 MEH2
1918
ARH NC APH AEH2 AEH1 CTL2 CTL1
35 38 37 36
CSP
Chroma Processing
CHRS FMPV 5VPB
CSYNC 5VAS VBS
GNDA CIN CSI
TUNER
RF-MODULATOR
52
1911
GNDA FMRV HP1 HSC TRIV ENVC-IFEO REV +5A FMPV GNDA
24
1591
AOUT1 AIN1 GAA VFV GNDA BLUE PIN10 GREEN SCRTV ES2 GAV RED BLANKING VOUT1 VIN1
AMLP AFV AE12 -7V +12A VTX VE12 H2 # VSB FSC # VIDOUT 5VAS SCL SDA 8SC2
+5D # INT # CLKD1 # GNDD # DATD1 # POR #
SCART 1/2
1917
MSIO (IO-UNIT)
or
# MVIO (TXT and IO-UNIT)
41
1915
PG/FG +14M2 GNDD GNDM2 +5D REEL
1916
TMO1 NC TMO2
47 46 45 44 43 42
1913
GNDM2 FG CAP CREV +14/9 GNDD TAE +5D WTL RECP FTA WTR LED INIT TAS SVHS
1914
GNDA GNDD +5V2D HELO +5A HEHI +5A +33V GNDM1 GNDM2 +8M2 +14M1 -28V +14A GNDA
NSM,MSM
Powersupply
Family Board
MAINS1 MAINS2
SM1
GNDA 15
GNDD 14
+5V2D 13
7 HELO 12
+5A 11
8 HEHI 10
+5A 9
+33V 8
GNDM1 7
GNDM2 6
+8M2 5
+14M1 4
-28V 3
+14A 2
GNDA 1
Component side
LHA Head Amplifier
L6
GNDA FMRV HP1 HSC TRIV ENVC-IFEO REV +5A FMPV GNDA
L1
PG/FG +14M2 GNDD GNDM2 +5D REEL
L2
GNDM1 FG CAP CREV +14/9 GNDD TAE +5D WTL RECP FTA WTR LED INIT TAS SVHS
HEAD-DRUM
L8
1 MEH2
2 MEH1
L3
ARH NC APH AEH2 AEH1 CTL2 CTL1
L4
TMO1 NC TMO2
WD-MM
Deck Mechanic
DC1
PSS/PWM AFC SCL SDA SB1/STROBE HEHI NC HELO INT -28V CLKD1 +5D DATD1 GNDD POR
MDC,NDC
Display Control
Component side

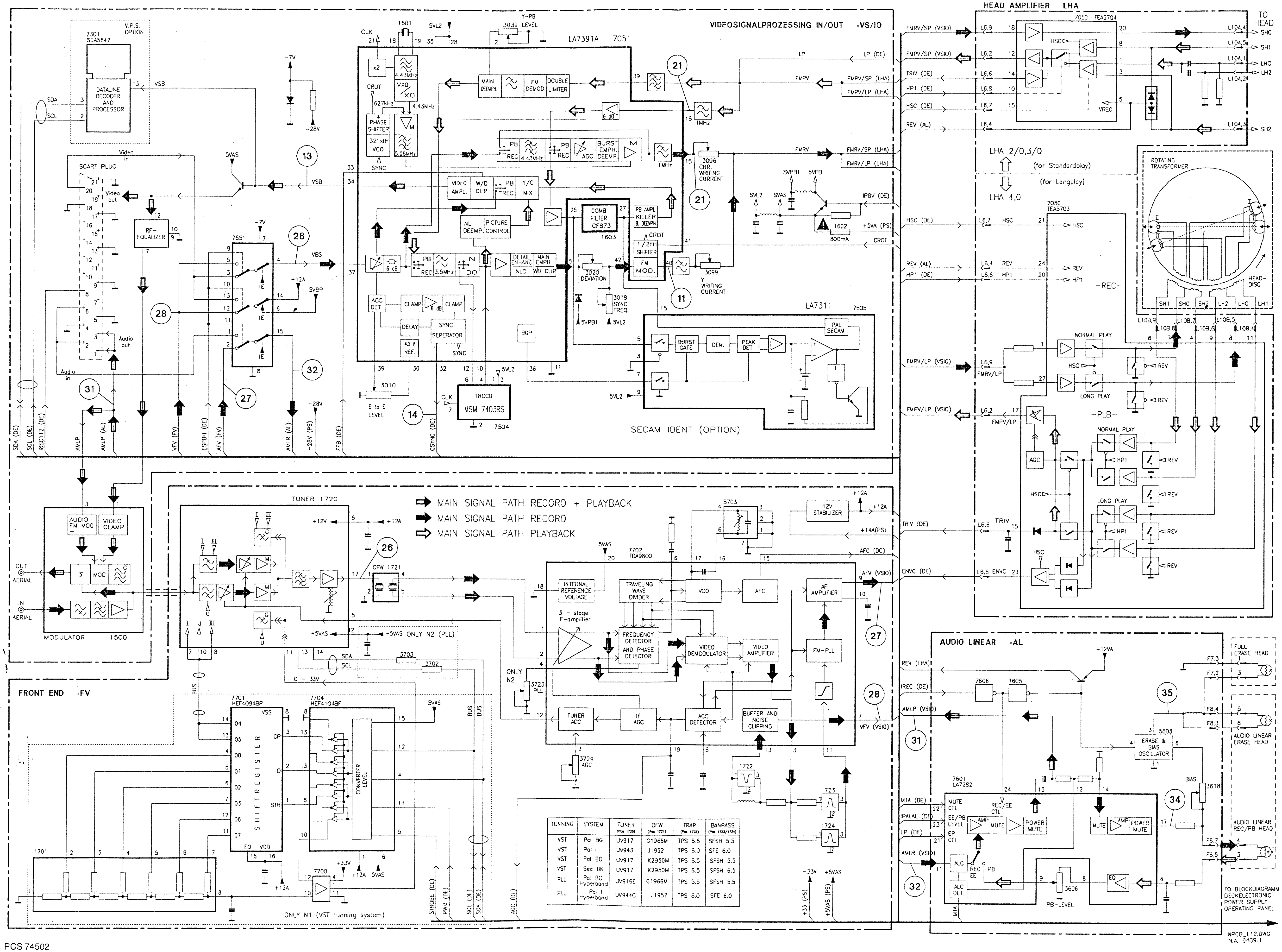
#.... ONLY FOR TXT

*.... ONLY FOR SECAM-L

WIRING DIAGRAM N4

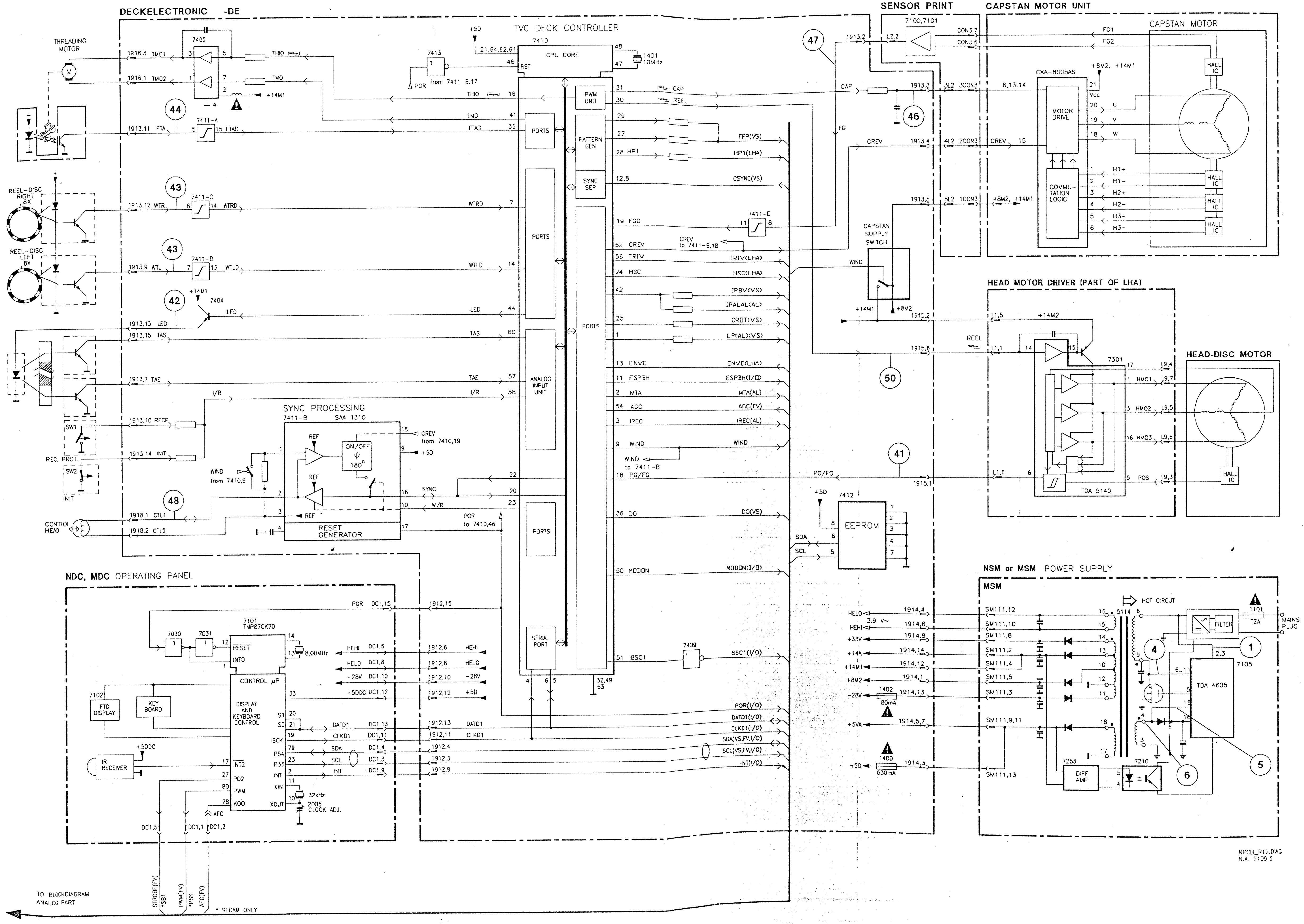

NFB4
Family Board
Component side
only for Secam-L
1918(F8)
7 ARH 6 NC 5 APH 4 AEH2 3 AEH1 2 CTL2 1 CTL1
1919(B6)
N.C. MEH1 MEH2
1912
PWM/PSS AFC SCL SDA STROBE/SB1 HEHI NC HELO INT -28V CLKO1 +5D DATD1 GNDD POR
CSP
Chroma Processing
only for Secam-L
CHRS FMPV 5VPB
CSYNC 5VAS VBS
GNDA CIN CSI
1922
N.C. EDIT1 EDIT2
TUNER
NFM
FM Processing
1911
1102
GNDA FMRV HP1 HSC TRIV ENVC REV +5A FMPV GNDA
GND SOFT1 SOFT2 TAPE REV ENVC TRIV HSC HP1 FMRV 5VFB FMPV 5VAS GND FM
# 2433.
# 2508.
1591
SCART 1/2
1917/1954
AOUT1 AIN1 GNDA VFIV GNDA BLUE PIN10 GREEN SCRTV ES2 RED GNDA BLANKING VOUT1 VIN1
AMLP AFV AE12 -7V +12A VFVTX VE12 ES1 VSB FOME VIDOUT 5VAS SCL SDA ES2 IOFP CSYNC +5D GNDD N.C. MP 9536
NIO
OSD- and IO-UNIT
RF-MODULATOR
1915
PGFG +14M2 GNDD GNDM2 +5D REEL
1916(F2)
TMO1 NC TMO2
1925
GNDA VFR +12A AFR GNDA
1913(F3)
GNDM2 FG CAP CREV +149 GNDD TAE +5D WTL RECP FTA WTR LED INIT TAS SVHS
1914(F1)
GNDA GNDD +5V2D HELO +5A HEHI +33V GNDM1 GNDM2 +8M2 +14M1 -28V +14A GNDA
# 2507.
# 2459.
# 2461.
# 2418.
# 2445.
# 2446.
# 2465.
# 2509.
# 2504.
NSM
Powersupply
MAINS1 MAINS2
SM1
15 GNDA 14 GNDD 13 +5V2D 12 HELO 11 +5A 10 HEHI 9 +5A 8 +33V 7 GNDM1 6 GNDM2 5 +8M2 4 +14M1 3 -28V 2 +14A 1 GNDA
LHA Head Amplifier
GNDA FMRV HP1 HSC TRIV ENVC-2FEO REV +5A FMPV GNDA
L6
PGFG +14M2 GNDD GNDM2 +5D REEL
L1
GNDM1 FG CAP CREV +149 GNDD TAE +5D WTL RECP FTA WTR LED INIT TAS SVHS
L2
HEAD-DRUM
ARH NC APH AEH2 AEH1 CTL2 CTL1
L3
TMO1 NC TMO2
L4
1 MEH2 2 MEH1
L8
WD-MM
Deck Mechanic
top view
1101 (1932)
PSS/PWM AFC SCL SDA SB1/STROBE HEHI NC HELO INT -28V CLKO1 +5D DATD1 GNDD POR
1103
GNDA VFR +12A AFR GNDA
1105
GNDA EDIT2 EDIT1 N.C.
NDCP 4
Display Control
DISPLAY
Component side

BLOCKDIAGRAM ANALOG PART


N1 N2
VIDEOSIGNALPROZESSING IN/OUT -VS/IO
LA7391A 7051
7301 SDA5642
V.P.S. OPTION
DATALINE DECODER AND PROCESSOR
VSB
SDA
SCL
SCART PLUG
Video in
Video out
Audio out
Audio in
RF-EQUALIZER
7551
VBS
IE
+12A
5V8P
5VAS
-7V
-28V
1601
4.43MHz
VXO
627kHz
4 PHASE SHIFTER
321xfH VCO
CROT
SYNC
CLK
5VL2
Y-PB LEVEL 3039
MAIN DEEMPH.
FM DEMOD
DOUBLE LIMITER
PB REC 4.43MHz
BURST EMPH. DEEMP.
AGC
6 dB
1MHz
VIDEO AMPL.
W/D CLIP
Y/C MIX
NL DEEMP
PICTURE CONTROL
COMB FILTER CF873 1603
PB AMPL KILLER & DEEMPH
1/2fH SHIFTER
FM MOD.
PB REC 3.5MHz
DO
DETAIL ENHANC NLC
MAIN EMPH WD CLIP
ACC DET
CLAMP
DELAY
SYNC SEPERATOR
4.2 V REF.
BGP
3010 E to E LEVEL
1HCCD MSM 7403RS 7504
3020 DEVIATION
3018 SYNC FREQ.
5VPB1
3096 CHR. WRITING CURRENT
3099 Y WRITING CURRENT
LA7311 7505
BURST GATE
DEM.
PEAK DET.
PAL SECAM
SECAM IDENT (OPTION)
LP (DE)
FMPV/SP (LHA)
FMPV/LP (LHA)
FMRV/SP (LHA)
FMRV/LP (LHA)
IPBV (DE)
+5VA (PS)
1602 800mA
SDA (DE)
SCL (DE)
IBSC12 (DE)
AMLP
AMLP (AL)
VFV (FV)
ESPBH (DE)
AFV (FV)
AMLR (AL)
-28V (PS)
FFB (DE)
CSYNC (DE)
HEAD AMPLIFIER LHA
7050 TEA5704
FMRV/SP (VSIO)
FMPV/SP (VSIO)
TRIV (DE)
HP1 (DE)
HSC (DE)
REV (AL)
HSC
VREC
TO HEAD
SHC
SH1
LHC
LH2
SH2
LHA 2/0,3/0 (for Standardplay)
LHA 4,0 (for Longplay)
7050 TEA5703
-REC-
-PLB-
NORMAL PLAY
LONG PLAY
FMRV/LP (VSIO)
FMPV/LP (VSIO)
AGC
ENVC (DE)
ROTATING TRANSFORMER
HEAD-DISC
MODULATOR 1500
AUDIO F.M MOD
VIDEO CLAMP
MOD
OUT AERIAL
IN AERIAL
TUNER 1720
OFW 1721
+12V
+5VAS
+5VAS ONLY N2 (PLL)
3703
3702
0 - 33V
MAIN SIGNAL PATH RECORD + PLAYBACK
MAIN SIGNAL PATH RECORD
MAIN SIGNAL PATH PLAYBACK
5703
12V STABILIZER
+14A(PS)
AFC (DC)
7702 TDA9800
INTERNAL REFERENCE VOLTAGE
TRAVELING WAVE DIVIDER
VCO
AFC
AF AMPLIFIER
AFV (VSIO)
3 - stage IF-amplifier
FREQUENCY DETECTOR AND PHASE DETECTOR
VIDEO DEMODULATOR
VIDEO AMPLIFIER
FM-PLL
ONLY N2
3723 PLL
TUNER AGC
IF AGC
AGC DETECTOR
BUFFER AND NOISE CLIPPING
VFV (VSIO)
3724 AGC
1722
1723
1724
-33V
+5VAS
+33 (PS)
+5VAS (PS)
FRONT END -FV
BUS
7701 HEF4094BP
SHIFTREGISTER
7704 HEF4104BP
CONVERTER LEVEL
1701
7700
ONLY N1 (VST tunning system)
STROBE (DE)
PWM (DE)
SCL (DE)
SDA (DE)
AGC (DE)
AUDIO LINEAR -AL
REV (LHA)
IREC (DE)
AMLP (VSIO)
MTA (DE)
PALAL (DE)
LP (DE)
AMLR (VSIO)
+12VA
7606
7605
5603
ERASE & BIAS OSCILLATOR
BIAS
3618
7601 LA7282
MUTE CTL
REC/EE CTL
EE/PB LEVEL
EP CTL
AMP
MUTE
POWER MUTE
ALC
ALC DET.
REC EE
PB
3606 PB-LEVEL
EQ
MTA
FULL ERASE HEAD
AUDIO LINEAR ERASE HEAD
AUDIO LINEAR REC/PB HEAD
TO BLOCKDIAGRAMM DECKELECTRONIC POWER SUPPLY OPERATING PANEL
NPCB_L12.DWG N.A. 9409.1
11
13
14
21
26
27
28
31
32
34
35

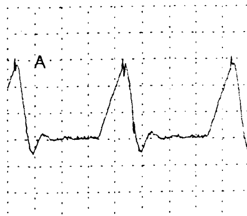
TUNNING	SYSTEM	TUNER (Pos 1720)	OFW (Pos 1721)	TRAP (Pos 1722)	BANPASS (Pos 1723/1724)
VST	Pal BG	UV917	G1966M	TPS 5.5	SFSH 5.5
VST	Pal I	UV943	J1952	TPS 6.0	SFE 6.0
VST	Pal BG	UV917	K2950M	TPS 6.5	SFSH 5.5
VST	Sec DK	UV917	K2950M	TPS 6.5	SFSH 6.5
PLL	Pal BG Hyperband	UV916E	G1966M	TPS 5.5	SFSH 5.5
PLL	Pal I Hyperband	UV944C	J1952	TPS 6.0	SFE 6.0

BLOCK DIAGRAM DIGITAL PART N1 N2


DECKELECTRONIC -DE
THREADING MOTOR
7402
1916.3 TMO1
1916.1 TMO2
THIO
TMO
+14M1
44
7411-A
1913.11 FTA
FTAD
REEL-DISC RIGHT 8X
43
7411-C
1913.12 WTR
WTRD
REEL-DISC LEFT 8X
7411-D
1913.9 WTL
WTLD
42
+14M1
7404
ILED
1913.13 LED
1913.15 TAS
1913.7 TAE
SW1
1913.10 RECP
REC. PROT.
1913.14 INIT
SW2
INIT
48
CONTROL HEAD
1918.1 CTL1
1918.2 CTL2
I/R
WIND from 7410.9
SYNC PROCESSING
7411-B SAA 1310
REF
ON/OFF φ 180°
CREV from 7410.19
+5D
SYNC
W/R
RESET GENERATOR
POR to 7410.46
+5D
TVC DECK CONTROLLER
7410
21,64,62,61
CPU CORE
RST
1401 10MHz
7413
POR
from 7411-B.17
THIO
TMO
FTAD
WTRD
WTLD
ILED
TAS
TAE
I/R
PORTS
ANALOG INPUT UNIT
PWM UNIT
PATTERN GEN
SYNC SEP
SERIAL PORT
CAP
REEL
FFP(VS)
28 HP1
HP1(LHA)
12.8
CSYNC(VS)
7411-E
19 FGD
52 CREV
CREV to 7411-B.18
56 TRIV
TRIV(LHA)
24 HSC
HSC(LHA)
IPBV(VS)
IPALAL(AL)
CRDT(VS)
LP(AL)(VS)
13 ENVC
ENVC(LHA)
11 ESP.BH
ESPBH(I/O)
2 MTA
MTA(AL)
54 AGC
AGC(FV)
3 IREC
IREC(AL)
9 WIND
WIND
WIND to 7411-B
18 PG/FG
PG/FG
36 DO
DO(VS)
50 MODON
MODON(I/O)
51 ISSC1
7409
ISSC1(I/O)
32,49 63
47
46
CAP
1913.2
1913.3
1913.4
1913.5
CREV
FG
SENSOR PRINT
7100,7101
CON3.7
CON3.6
L2.2
3L2 3CON3
4L2 2CON3
5L2 1CON3
CAPSTAN MOTOR UNIT
CAPSTAN MOTOR
FG1
FG2
CXA-8005AS
+8M2, +14M1
8,13,14
MOTOR DRIVE
Vcc
U
V
W
CREV 15
+8M2, +14M1
COMMU-TATION LOGIC
H1+
H1-
H2+
H2-
H3+
H3-
HALL IC
CAPSTAN SUPPLY SWITCH
WIND
+14M1
+8M2
1915.2
1915.6
50
REEL
HEAD MOTOR DRIVER (PART OF LHA)
+14M2
L1.5
L1.1
7301
L9.4
HMO1 L9.7
HMO2 L9.5
HMO3 L9.6
POS L9.3
L1.6
TDA 5140
HEAD-DISC MOTOR
41
1915.1
7412
EEPROM
SDA
SCL
NSM or MSM POWER SUPPLY
MSM
HELO
HEHI
3.9 V~
+33V
+14A
+14M1
+8M2
-28V
+5VA
+5D
1914.4
1914.6
1914.8
1914.14
1914.12
1914.1
1914.13
1914.5,7
1914.3
1402 80mA
1400 630mA
SM111.12
SM111.10
SM111.8
SM111.2
SM111.4
SM111.5
SM111.3
SM111.9,11
SM111.13
HOT CIRCUIT
5114
1101 T2A
FILTER
MAINS PLUG
TDA 4605
7105
7253
DIFF AMP
7210
1
4
5
6
NDC, MDC OPERATING PANEL
POR DC1.15
1912.15
7030
7031
7101 TMP87CK70
RESET
INTO
8.00MHz
HEHI DC1.6
HELO DC1.8
-28V DC1.10
+5DDC DC1.12
1912.6 HEHI
1912.8 HELO
1912.10 -28V
1912.12 +5D
CONTROL μP
DISPLAY AND KEYBOARD CONTROL
7102
FTD DISPLAY
KEY BOARD
DATD1 DC1.13
CLKD1 DC1.11
SDA DC1.4
SCL DC1.3
INT DC1.9
1912.13 DATD1
1912.11 CLKD1
1912.4
1912.3
1912.9
POR(I/O)
DATD1(I/O)
CLKD1(I/O)
SDA(VS,FV,I/O)
SCL(VS,FV,I/O)
INT(I/O)
+5DDC
IR RECEIVER
INT2
P02
PWM
KOO
XIN
XOUT
32kHz
2005 CLOCK ADJ.
AFC
DC1.5
DC1.1
DC1.2
STROBE(FV) *SB1
PWM(FV)
*PSS
AFC(FV)
* SECAM ONLY
TO BLOCKDIAGRAM ANALOG PART
NPCB_R12.DWG
N.A. 9409.3

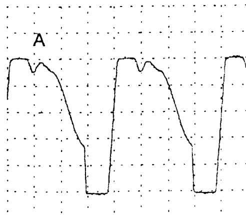
OSCILLOGRAM

A: DC, 0.2V/Div, 2us/Div



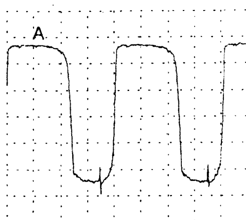
IC7105 Pin 2 Osc

A: DC, 0.1kV/Div, 2us/Div



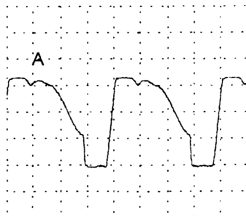
IC7105 Pin 6..11 Osc

A: DC, 0.2V/Div, 2us/Div



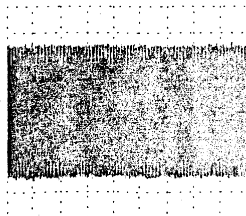
IC7105 Pin 18 Osc

A: DC, 10V/Div, 2us/Div



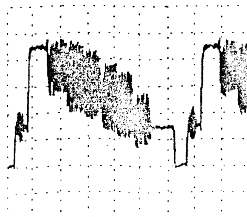
Trafo 5114 Pin 4 Osc

A: AC, 0.2 V/Div , 2 us/Div



IC7051 Pin 40 Osc

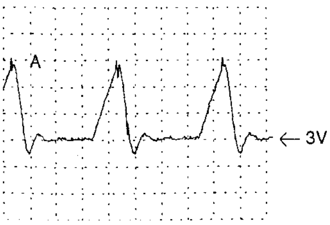
A: DC, 0.5 V/Div 10 us/Div



IC 7051 Pin 34 VSB Osc

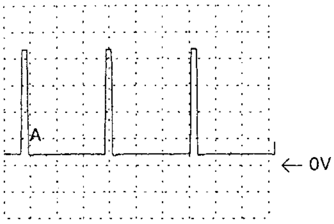
OSCILLOGRAMS BLOCK DIAGRAM

A: DC, 0.2V/Div, 2us/Div



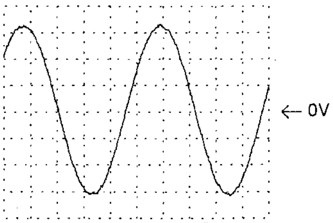
IC7105 Pin 2 Osc. 1

A: DC, 1.0 V/Div , 20 us/Div



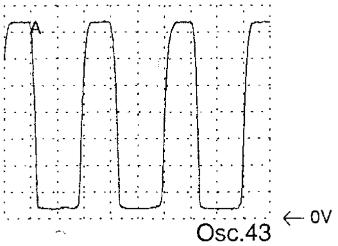
IC7051 Pin 32 Osc.14

A: DC, 0.2 V/Div, 0.2 ms/Div



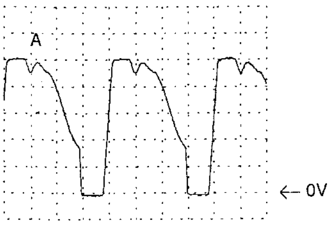
Capacitor 2611 Osc.31
AMLP

A: DC, 0.5 V/Div, 2 ms/Div



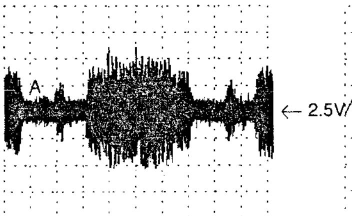
Osc.43

A: DC, 0.1kV/Div, 2us/Div



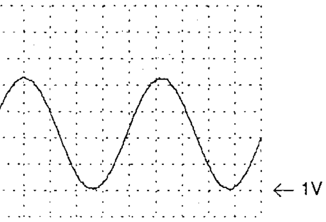
IC7105 Pin 6..11 Osc. 4

A: AC, 0.2 V/Div , 10 us/Div



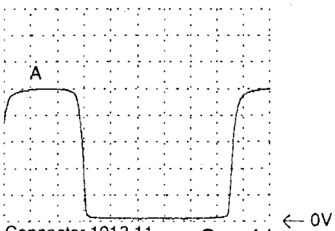
IC7051 Pin 15 Osc.21
(measured in play)

A: DC, 0.2 V/Div, 0.2 ms/Div



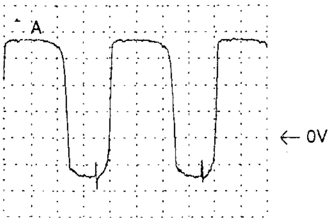
Resistor 3611 Osc.32
AMLR

A: DC, 1 V/Div, 2 ms/Div



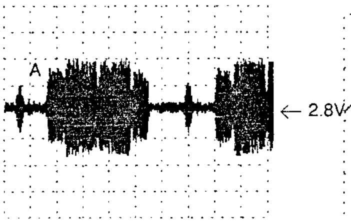
Connector 1913,11 Osc.44
FTA Threading

A: DC, 0.2V/Div, 2us/Div



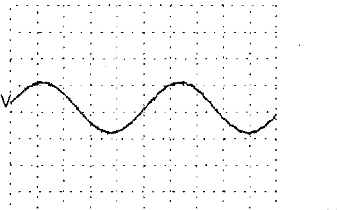
IC7105 Pin 18 Osc. 5

A: AC, 0.1 V/Div , 10 us/Div



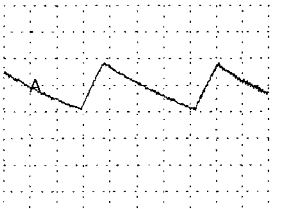
IC7051 Pin 15 Osc.21

A: DC, 1 V/Div, 0.2 ms/Div



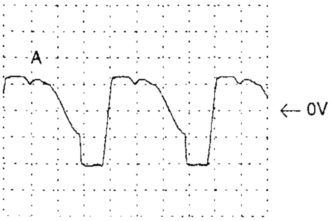
IC 7601 Pin 17 Osc.34

A: DC, 0.2 V/Div, 10 us/Div



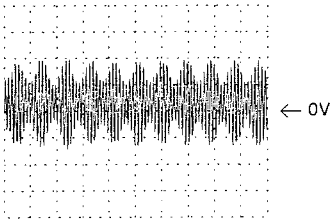
Connector 1913,3 Osc.46
CAP

A: DC, 10V/Div, 2us/Div



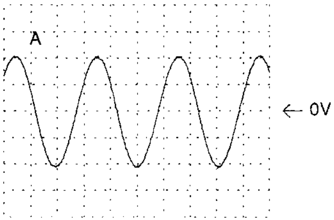
Trafo 5114 Pin 4 Osc. 6

A: DC, 0.1 V/Div 0.2 us/Div



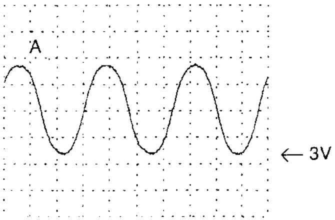
Tuner 1701 Pin 177 Osc.26

A: DC, 10 V/Div, 5 us/Div



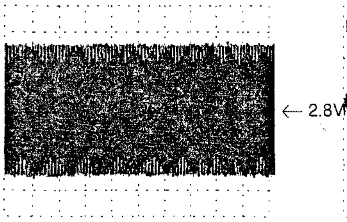
Connector 1919,2 Osc.35
Main erase head 1)

A: AC, 0.5 V/Div, 0.2 ms/Div



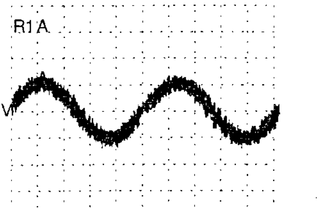
Connector 1913,2 Osc.47
FG

A: AC, 0.2 V/Div , 2 us/Div



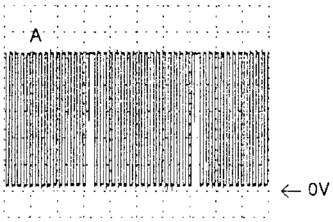
IC7051 Pin 40 Osc.11

A: DC, 0.5 V/Div 0.2 ms/Div



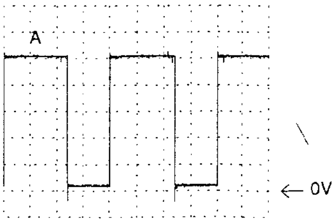
IC 7720 Pin 9 Osc.27
AFV

A: DC, 1 V/Div, 10 ms/Div



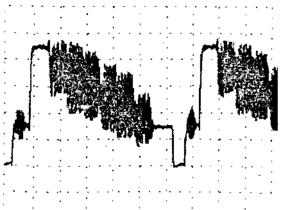
Connector 1915,1 Osc.41
PG/FG

A: DC, 1 V/Div, 10 ms/Div



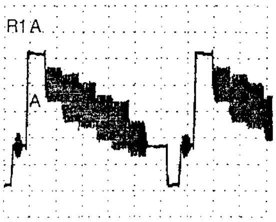
IC 7411 Pin 2 Osc.48
CTL1 REC

A: DC, 0.5 V/Div 10 us/Div



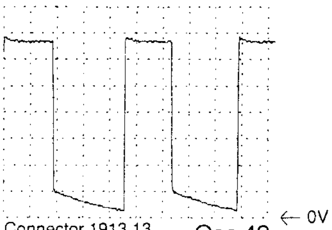
IC 7051 Pin 34 Osc.13
VSB

A: DC, 0.2 V/Div 10 us/Div



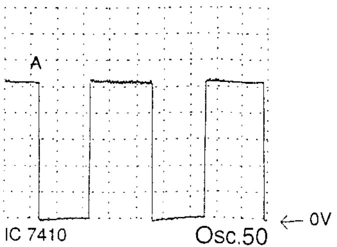
Osc.28

A: DC, 0.5 V/Div, 0.5 ms/Div



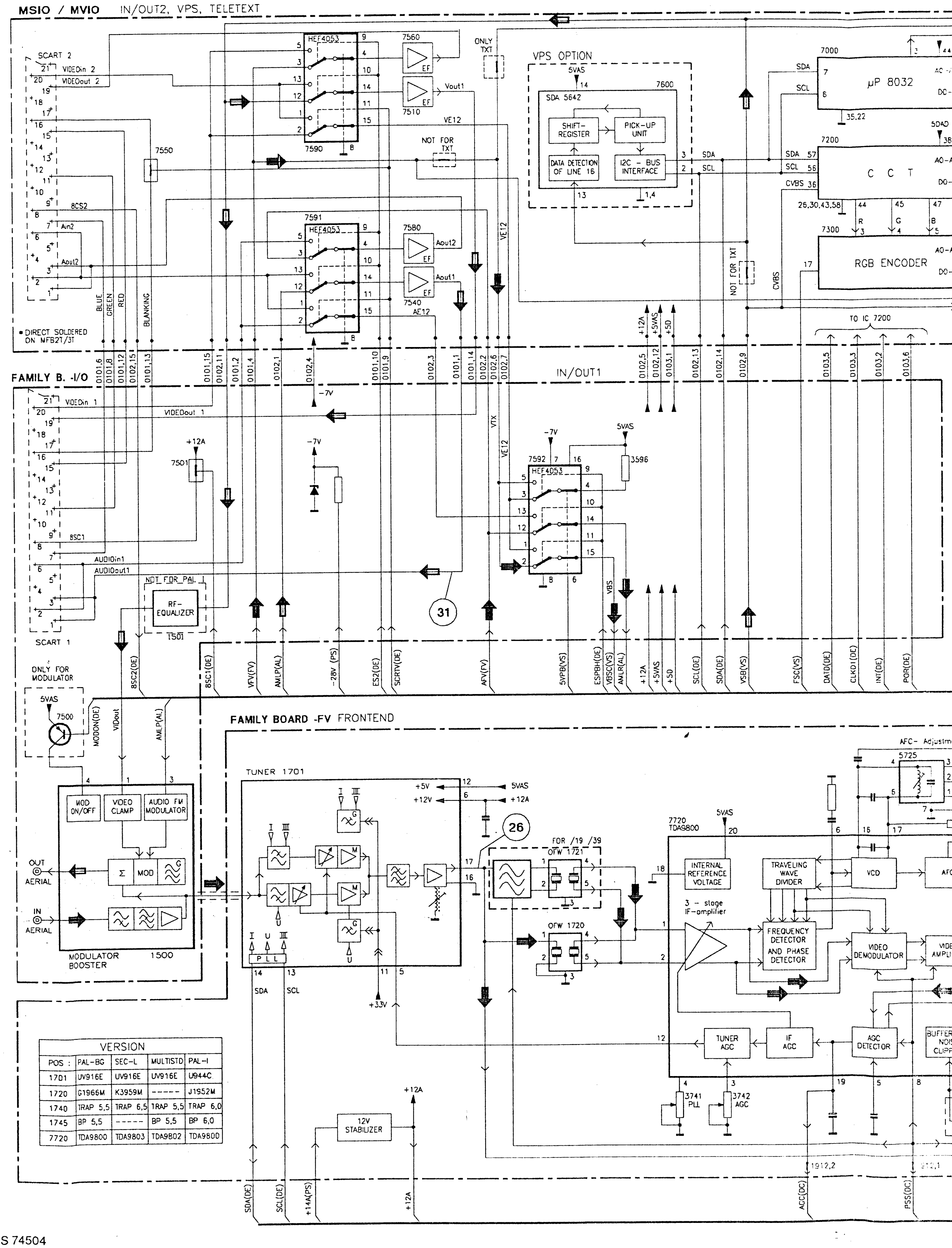
Connector 1913,13 Osc.42
LED

A: DC, 1 V/Div, 10 us/Div

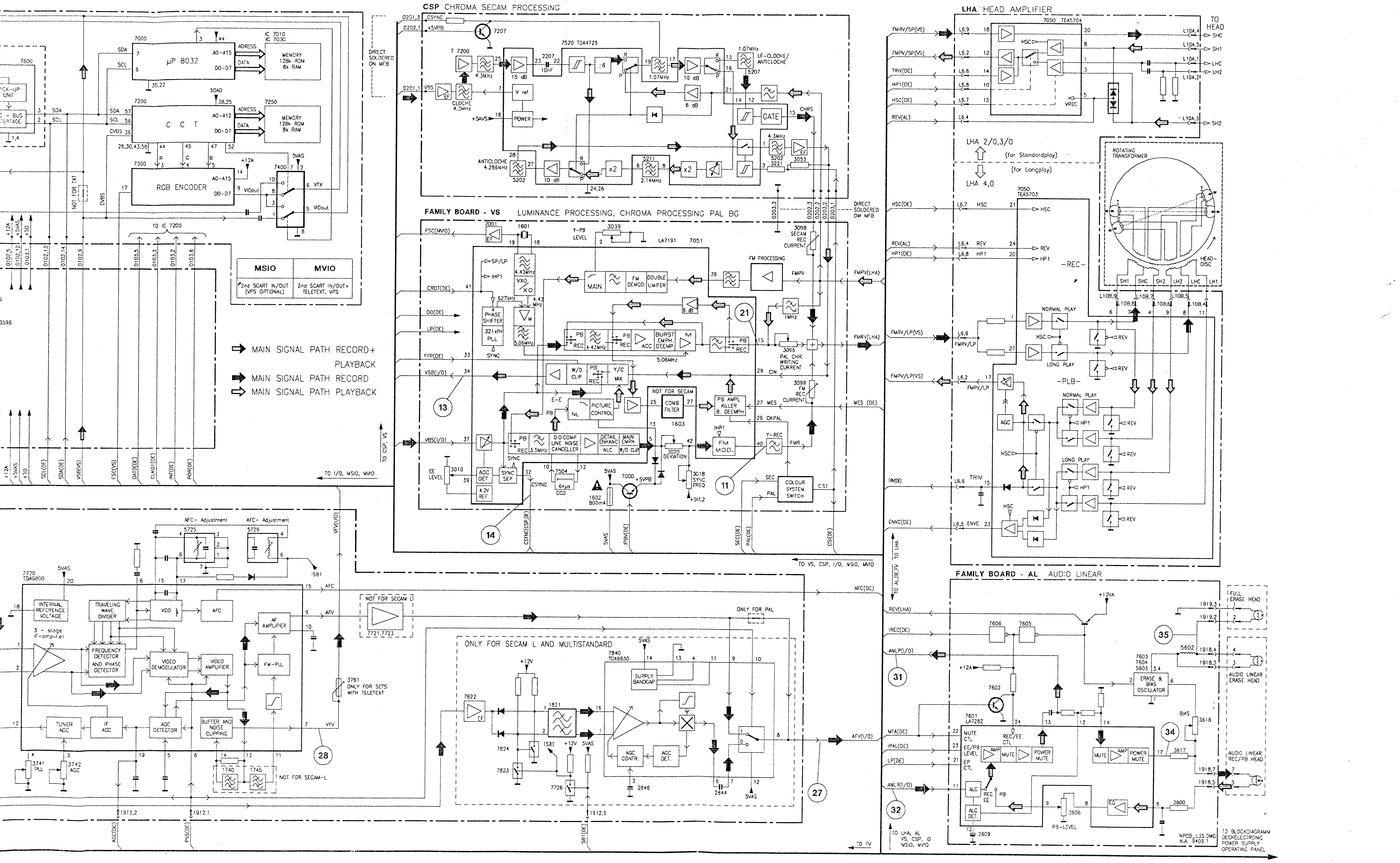


IC 7410 Osc.50
REEL

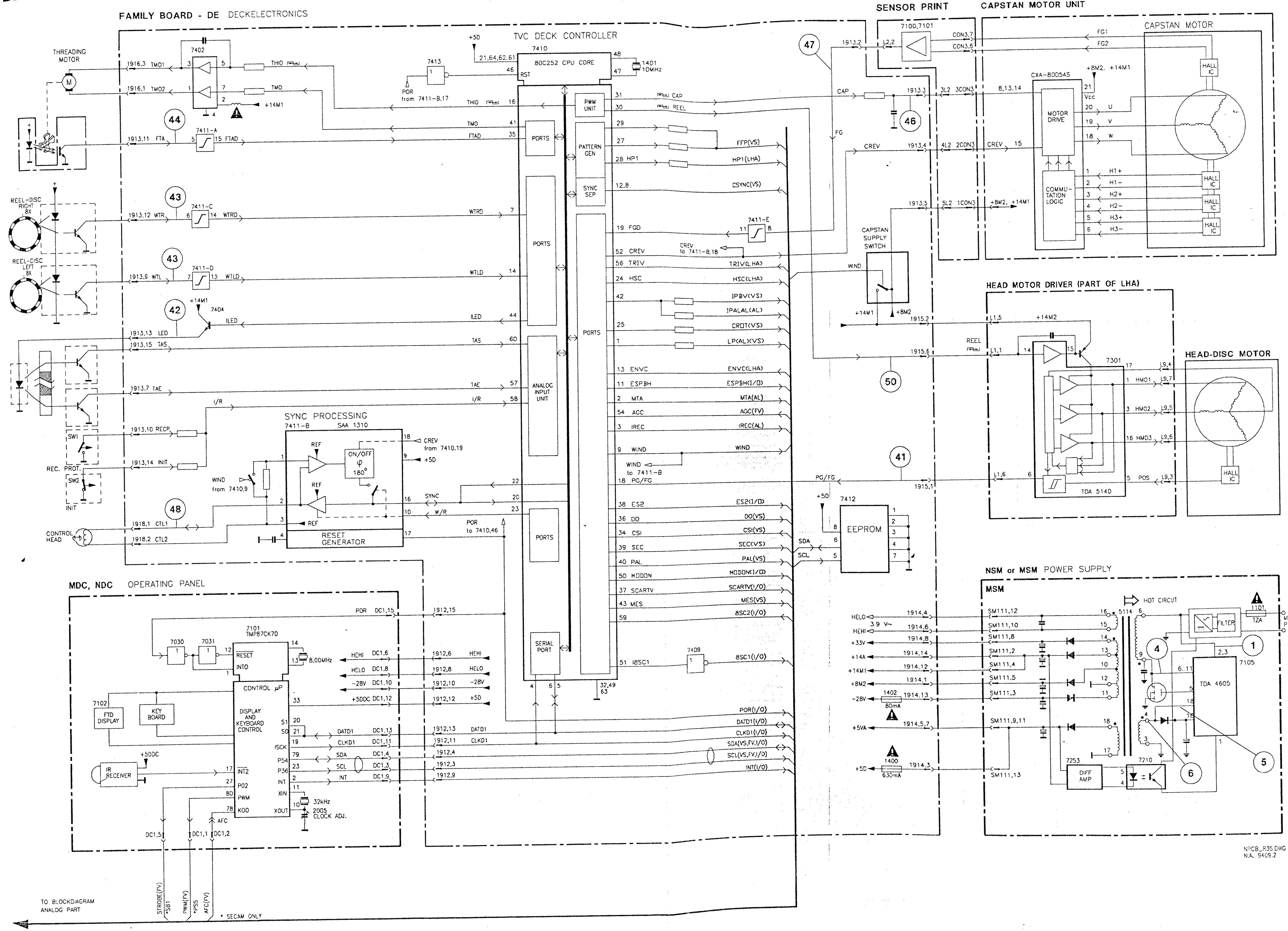
BLOCK DIAGRAM ANALOG PART N3 N5


MSIO / MVIO IN/OUT2, VPS, TELETEXT
SCART 2
VIDEOin 2
VIDEOout 2
8CS2
Ain2
Aout2
BLUE
GREEN
RED
BLANKING
* DIRECT SOLDERED ON MFB2T/3T
7550
HEF4053
7590
7560
7510
EF
Vout1
VE12
NOT FOR TXT
ONLY TXT
7591
7580
7540
Aout2
Aout1
AE12
VPS OPTION
5VAS
7600
SDA 5642
SHIFT-REGISTER
PICK-UP UNIT
DATA DETECTION OF LINE 16
I2C - BUS INTERFACE
SDA
SCL
7000
µP 8032
7200
C C T
CVBS
7300
RGB ENCODER
TO IC 7200
FAMILY B. -I/O
IN/OUT1
VIDEOin 1
VIDEOout 1
8SC1
AUDIOin1
AUDIOout1
SCART 1
7501
NOT FOR PAL I
RF-EQUALIZER
1501
7592
3596
VTX
VBS
31
ONLY FOR MODULATOR
7500
MODON(DE)
VIDout
AMLP(AL)
MOD ON/OFF
VIDEO CLAMP
AUDIO FM MODULATOR
MOD
OUT AERIAL
IN AERIAL
MODULATOR BOOSTER
1500
FAMILY BOARD -FV FRONTEND
TUNER 1701
PLL
+33V
26
FOR /19 /39
OFW 1721
OFW 1720
7720 TDA9800
INTERNAL REFERENCE VOLTAGE
TRAVELING WAVE DIVIDER
VCO
3 - stage IF-amplifier
FREQUENCY DETECTOR AND PHASE DETECTOR
VIDEO DEMODULATOR
TUNER AGC
IF AGC
AGC DETECTOR
3741 PLL
3742 AGC
12V STABILIZER
AFC- Adjustm
5725
SDA(DE)
SCL(DE)
+14A(PS)
+12A
AGC(DC)
PSS(DC)

VERSION				
POS :	PAL-BG	SEC-L	MULTISTD	PAL-I
1701	UV916E	UV916E	UV916E	U944C
1720	G1966M	K3959M	------	J1952M
1740	TRAP 5,5	TRAP 6,5	TRAP 5,5	TRAP 6,0
1745	BP 5,5	------	BP 5,5	BP 6,0
7720	TDA9800	TDA9803	TDA9802	TDA9800

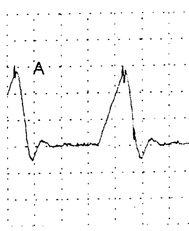

CSP CHROMA SECAM PROCESSING
7520 TDA4725
T 7200
CLOCHE 4.3MHz
ANTICLOCHE 4.286MHz
1.07MHz LF-CLOCHE/ ANTICLOCHE
GATE
CHRS
DIRECT SOLDERED ON MFB
μP 8032
IC 7010 IC 7030
MEMORY 128k ROM 8k RAM
C C T
RGB ENCODER
NOT FOR TXT
TO IC 7200
MSIO
MVIO
2nd SCART IN/OUT (VPS OPTIONAL)
2nd SCART IN/OUT+ TELETEXT, VPS
MAIN SIGNAL PATH RECORD+ PLAYBACK
MAIN SIGNAL PATH RECORD
MAIN SIGNAL PATH PLAYBACK
FAMILY BOARD - VS LUMINANCE PROCESSING, CHROMA PROCESSING PAL BG
LA7191 7051
FM PROCESSING
FM DEMOD. DOUBLE LIMITER
PHASE SHIFTER
321xfH PLL
BURST EMPH. DEEMP
W/D CLIP
Y/C MIX
NOT FOR SECAM
COMB FILTER
PICTURE CONTROL
PB AMPL KILLER B. DEEMPH
D.O.COMP LINE NOISE CANCELLER
DETAIL ENHANC NLC
MAIN EMPH W/D CLIP
FM MOD.
3020 DEVIATION
3018 SYNC FREQ.
COLOUR SYSTEM SWITCH
AGC DET
SYNC SEP
4.2V REF.
EE LEVEL
1602 800mA
3096 PAL CHR. WRITING CURRENT
3099 FM REC CURRENT
3098 SECAM REC CURRENT
TO CSP, VS
TO I/O, MSIO, MVIO
TO VS, CSP, I/O, MSIO, MVIO
LHA HEAD AMPLIFIER
7050 TEA5704
TO HEAD
LHA 2/0,3/0 (for Standardplay)
LHA 4,0 (for Longplay)
7050 TEA5703
ROTATING TRANSFORMER
HEAD-DISC
NORMAL PLAY
LONG PLAY
-REC-
-PLB-
7720 TDA9800
INTERNAL REFERENCE VOLTAGE
TRAVELING WAVE DIVIDER
3 - stage IF-amplifier
FREQUENCY DETECTOR AND PHASE DETECTOR
VIDEO DEMODULATOR
VIDEO AMPLIFIER
AF AMPLIFIER
FM-PLL
TUNER AGC
IF AGC
AGC DETECTOR
BUFFER AND NOISE CLIPPING
NOT FOR SECAM-L
AFC- Adjustment
3741 PLL
3742 AGC
NOT FOR SECAM 7721,7723
3761 ONLY FOR SETS WITH TELETEXT
ONLY FOR SECAM L AND MULTISTANDARD
7840 TDA9830
SUPPLY BANDGAP
AGC CONTR.
AGC DET.
ONLY FOR PAL
TO AL,DE,FV TO LHA
FAMILY BOARD - AL AUDIO LINEAR
FULL ERASE HEAD
AUDIO LINEAR ERASE HEAD
AUDIO LINEAR REC/PB HEAD
ERASE & BIAS OSCILLATOR
7601 LA7282
MUTE CTL
REC/EE CTL
EE/PB LEVEL
EP CTL
POWER MUTE
ALC DET.
PB-LEVEL
TO LHA, AL VS, CSP, IO MSIO, MVIO
TO FV
NPCB_L35.DWG N.A. 9409.1
TO BLOCKDIAGRAMM DECKELECTRONIC POWER SUPPLY OPERATING PANEL
11
13
14
21
27
28
31
32
34
35

BLOCK DIAGRAM DIGITAL PART N3 N5


FAMILY BOARD - DE DECKELECTRONICS
THREADING MOTOR
TVC DECK CONTROLLER
7410
80C252 CPU CORE
1401 10MHz
7413
POR from 7411-B,17
7402
THIO
TMO
+14M1
44
7411-A
FTA
FTAD
PORTS
PWM UNIT
PATTERN GEN
SYNC SEP
ANALOG INPUT UNIT
SERIAL PORT
CAP
REEL
FFP(VS)
HP1(LHA)
CSYNC(VS)
REEL-DISC RIGHT 8X
REEL-DISC LEFT 8X
43
7411-C
WTRD
7411-D
WTLD
42
7404
ILED
LED
TAS
TAE
I/R
7411-E
FGD
CREV
TRIV(LHA)
HSC(LHA)
IPBV(VS)
IPALAL(AL)
CROT(VS)
LP(AL)(VS)
ENVC(LHA)
ESPBH(I/O)
MTA(AL)
AGC(FV)
IREC(AL)
WIND
SYNC PROCESSING
7411-B SAA 1310
ON/OFF φ 180°
REF
RESET GENERATOR
CREV from 7410,19
+5D
SYNC
W/R
WIND from 7410,9
WIND to 7411-B
PG/FG
POR to 7410,46
SW1
SW2
REC. PROT.
INIT
RECP
48
CONTROL HEAD
CTL1
CTL2
ES2(I/O)
DO(VS)
CSI(VS)
SEC(VS)
PAL(VS)
MODON(I/O)
SCARTV(I/O)
MES(VS)
8SC2(I/O)
7409
8SC1(I/O)
POR(I/O)
DATD1(I/O)
CLKD1(I/O)
SDA(VS,FV,I/O)
SCL(VS,FV,I/O)
INT(I/O)
MDC, NDC OPERATING PANEL
7101 TMP87CK70
7030
7031
RESET
INTO
8.00MHz
CONTROL µP
DISPLAY AND KEYBOARD CONTROL
7102
FTD DISPLAY
KEY BOARD
IR RECEIVER
+5DDC
32kHz
2005 CLOCK ADJ.
HEHI
HELO
-28V
+5DDC
DATD1
CLKD1
SDA
SCL
INT
AFC
TO BLOCKDIAGRAM ANALOG PART
STROBE(FV) *SB1
PWM(FV) *PS5
AFC(FV)
* SECAM ONLY
47
SENSOR PRINT
7100,7101
CON3,7
CON3,6
CAPSTAN MOTOR UNIT
CAPSTAN MOTOR
FG1
FG2
CXA-8005AS
MOTOR DRIVE
COMMU-TATION LOGIC
HALL IC
H1+
H1-
H2+
H2-
H3+
H3-
+8M2, +14M1
46
CAPSTAN SUPPLY SWITCH
HEAD MOTOR DRIVER (PART OF LHA)
HEAD-DISC MOTOR
7301
TDA 5140
HMO1
HMO2
HMO3
POS
+14M2
50
41
7412
EEPROM
SDA
SCL
NSM or MSM POWER SUPPLY
MSM
HOT CIRCUIT
MAINS PLUG
1101 TZA
FILTER
TDA 4605
7105
5114
7253
DIFF AMP
7210
1402 80mA
1400 630mA
HELO
HEHI
3.9 V~
+33V
+14A
+14M1
+8M2
-28V
+5VA
+5D
1
4
5
6
NPCB_R35.DWG N.A. 9409.2

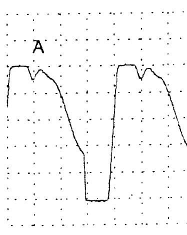
OSCILLOG

A: DC, 0.2V/Div, 2us/D



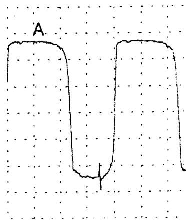
IC7105 Pin 2

A: DC, 0.1kV/Div, 2us



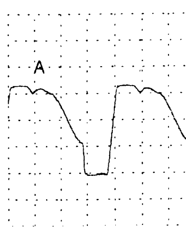
IC7105 Pin 6..11

A: DC, 0.2V/Div, 2us/D



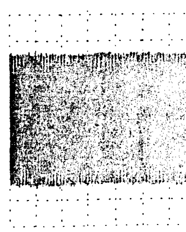
IC7105 Pin 18

A: DC, 10V/Div, 2us/D



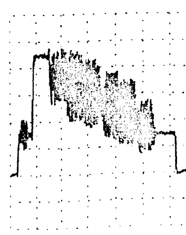
Trafo 5114 Pin 4

A: AC, 0.2 V/Div , 2 us



IC7051 Pin 40

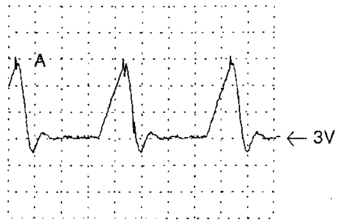
A: DC, 0.5 V/Div 10 us



IC 7051 Pin 34
VSB

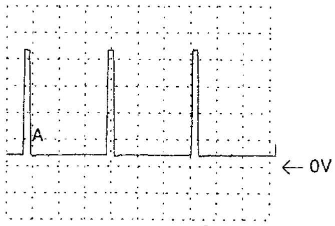
OSCILLOGRAMS BLOCK DIAGRAM

A: DC, 0.2V/Div, 2us/Div



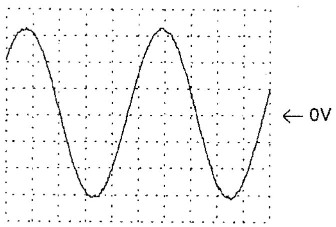
IC7105 Pin 2 Osc. 1

A: DC, 1.0 V/Div , 20 us/Div



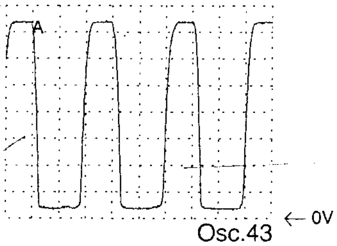
IC7051 Pin 32 Osc.14

A: DC, 0.2 V/Div, 0.2 ms/Div



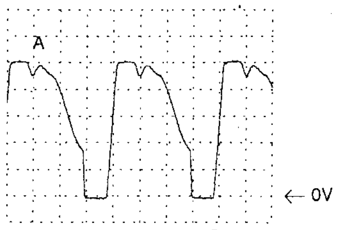
Capacitor 2611 Osc.31
AMLP

A: DC, 0.5 V/Div, 2 ms/Div



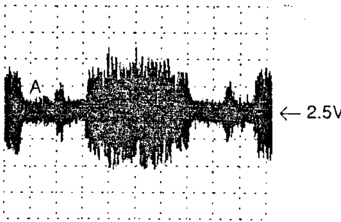
Osc.43

A: DC, 0.1kV/Div, 2us/Div



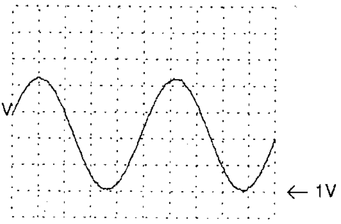
IC7105 Pin 6..11 Osc. 4

A: AC, 0.2 V/Div , 10 us/Div



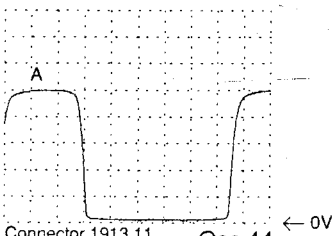
IC7051 Pin 15 Osc.21
(measured in play)

A: DC, 0.2 V/Div, 0.2 ms/Div



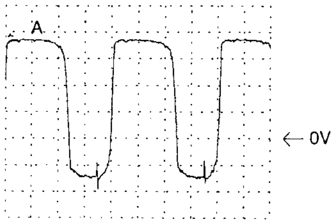
Resistor 3611 Osc.32
AMLR

A: DC, 1 V/Div, 2 ms/Div



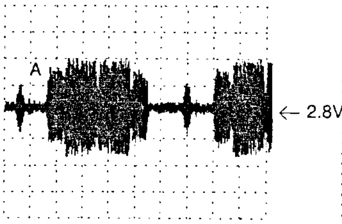
Connector 1913,11 Osc.44
FTA Threading

A: DC, 0.2V/Div, 2us/Div



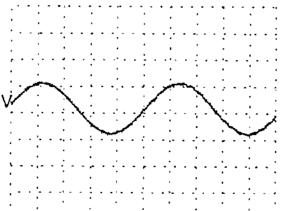
IC7105 Pin 18 Osc. 5

A: AC, 0.1 V/Div , 10 us/Div



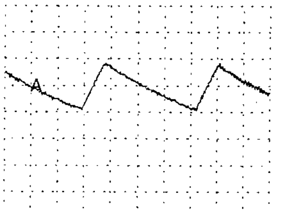
IC7051 Pin 15 Osc.21

A: DC, 1 V/Div, 0.2 ms/Div



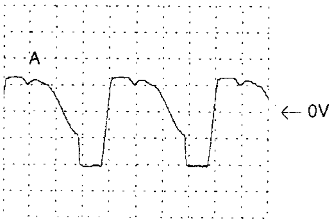
IC 7601 Pin 17 Osc.34

A: DC, 0.2 V/Div, 10 us/Div



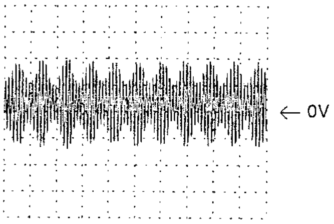
Connector 1913,3 Osc.46
CAP

A: DC, 10V/Div, 2us/Div



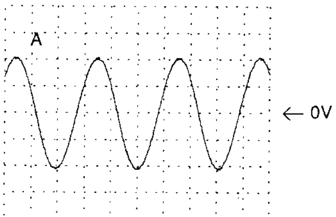
Trafo 5114 Pin 4 Osc. 6

A: DC, 0.1 V/Div 0.2 us/Div



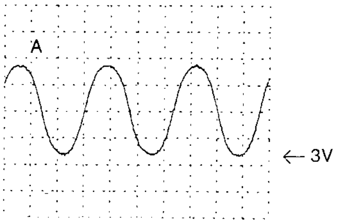
Tuner 1701 Pin 177 Osc.26

A: DC, 10 V/Div, 5 us/Div



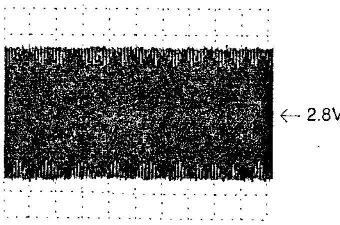
Connector 1919,2 Osc.35
Main erase head 1)

A: AC, 0.5 V/Div, 0.2 ms/Div



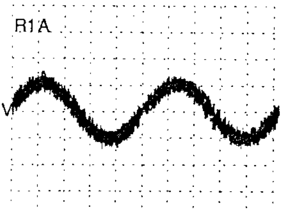
Connector 1913,2 Osc.47
FG

A: AC, 0.2 V/Div , 2 us/Div



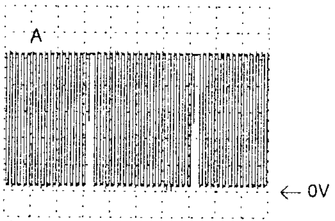
IC7051 Pin 40 Osc.11

A: DC, 0.5 V/Div 0.2 ms/Div



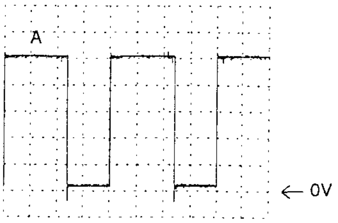
IC 7720 Pin 9 Osc.27
AFV

A: DC, 1 V/Div, 10 ms/Div



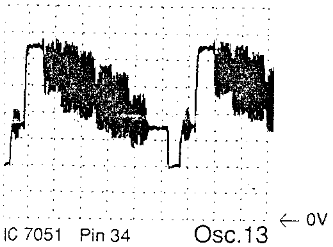
Connector 1915,1 Osc.41
PG/FG

A: DC, 1 V/Div, 10 ms/Div



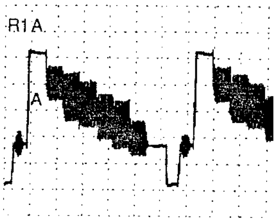
IC 7411 Pin 2 Osc.48
CTL1 REC

A: DC, 0.5 V/Div 10 us/Div



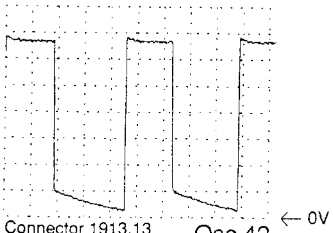
IC 7051 Pin 34 Osc.13
VSB

A: DC, 0.2 V/Div 10 us/Div



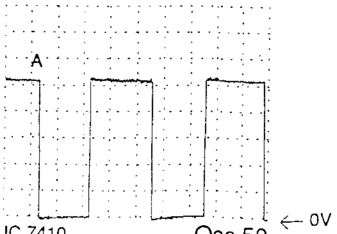
Osc.28

A: DC, 0.5 V/Div, 0.5 ms/Div



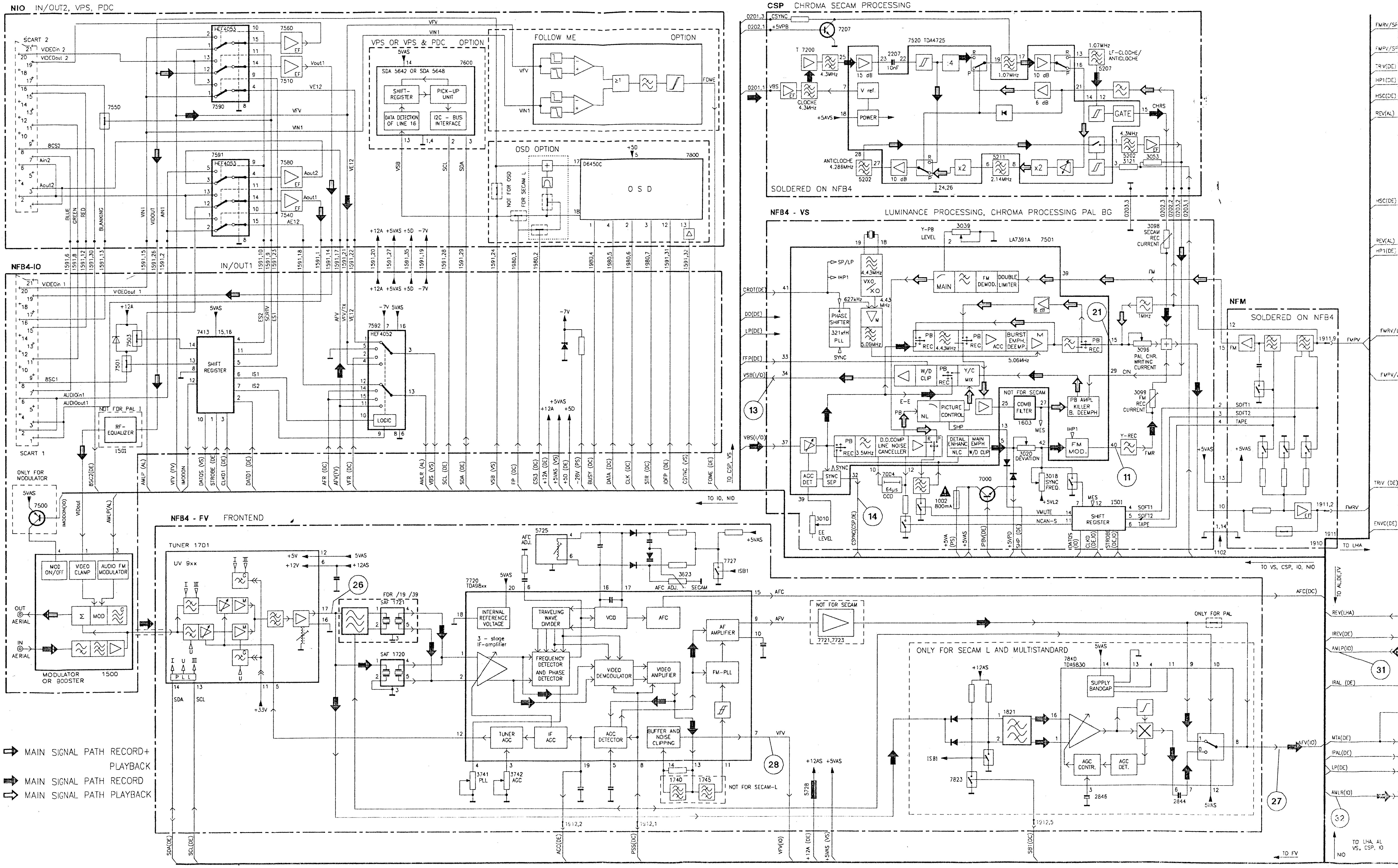
Connector 1913,13 Osc.42
LED

A: DC, 1 V/Div, 10 us/Div



IC 7410 Osc.50
REEL

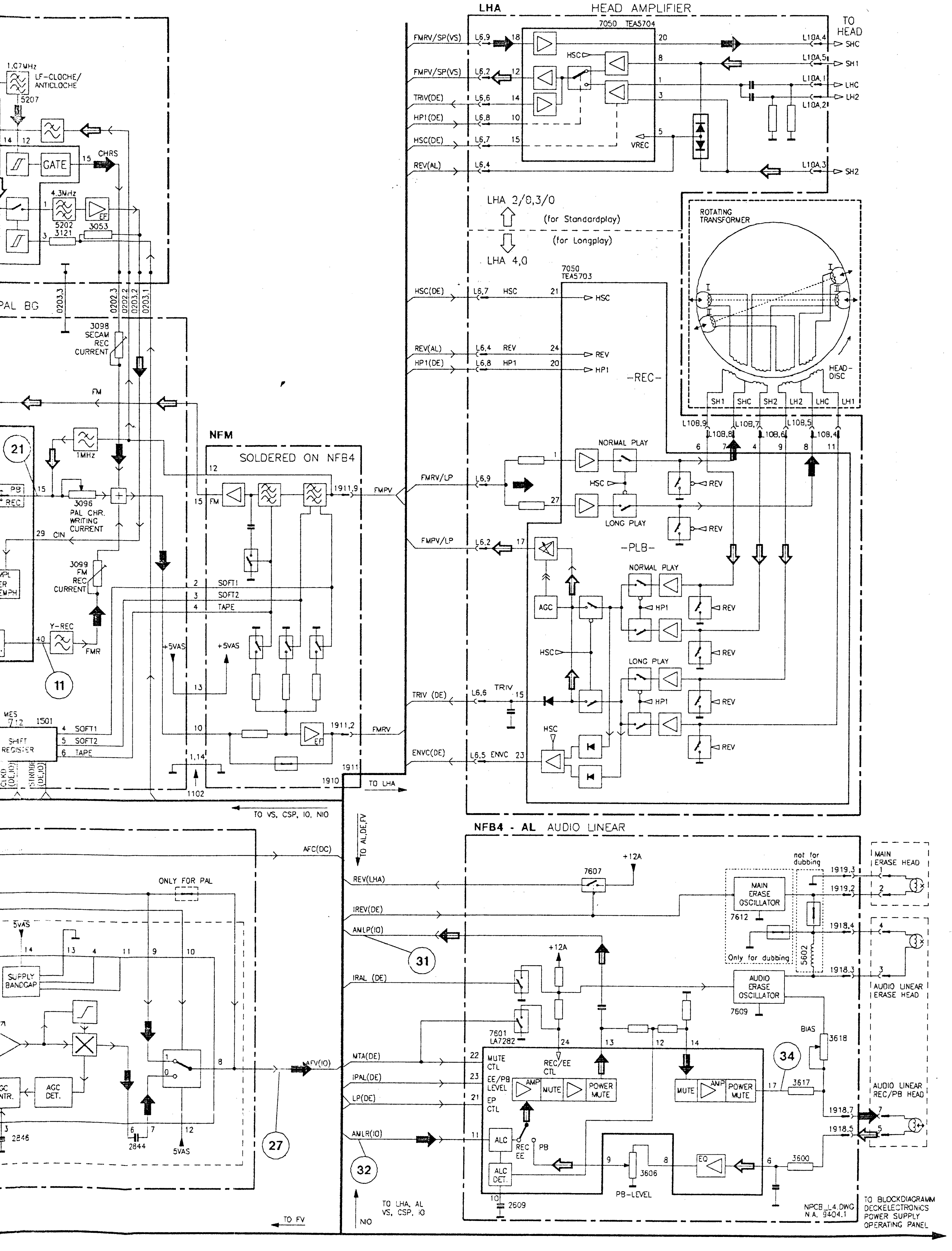
BLOCK DIAGRAM ANALOG PART N4


NIO IN/OUT2, VPS, PDC
SCART 2
VIDEOin 2
VIDEOout 2
8CS2
Ain2
Aout2
BLUE
GREEN
RED
BLANKING
HEF4053
7590
7591
7560
7510
7580
7540
7550
Vout1
VE12
VFV
VIN1
Aout2
Aout1
AE12
VPS OR VPS & PDC OPTION
5VAS
7600
SDA 5642 OR SDA 5648
SHIFT-REGISTER
PICK-UP UNIT
DATA DETECTION OF LINE 16
I2C - BUS INTERFACE
VSB
SCL
SDA
FOLLOW ME
OPTION
FOME
OSD OPTION
NOT FOR OSD
NOT FOR SECAM L
D6450C
7800
O S D
+12A +5VAS +5D -7V
NFB4-IO
IN/OUT1
VIDEOin 1
VIDEOout 1
8SC1
AUDIOin1
AUDIOout1
SCART 1
NOT FOR PAL I
RF-EQUALIZER
1501
7413
SHIFT REGISTER
7503
7501
7592
HEF4052
LOGIC
ES2
SCRTV
ES1
IS1
IS2
AFV
VFV/TX
ONLY FOR MODULATOR
7500
MOD ON/OFF
VIDEO CLAMP
AUDIO FM MODULATOR
MOD
MODULATOR OR BOOSTER
1500
OUT AERIAL
IN AERIAL
8SC2(DE)
AMLP (AL)
VFV (FV)
IMODON
DATOS (VS)
STROBE (DE)
CLKD1 (DE)
DATD1 (DE)
AFR (DC)
AFV(TV)
VFR (DC)
AMLR (AL)
VBS (VS)
SCL (DE)
SDA (DE)
VSB (VS)
FP (DC)
CSI3 (DC)
+12A (DC)
+5VAS (VS)
+5D (DE)
-28V (PS)
BUSY (DC)
DATA (DC)
CLK (DC)
STR (DC)
IOFP (DE)
CSYNC (VS)
FOME (DE)
TO CSP, VS
TO IO, NIO
NFB4 - FV FRONTEND
TUNER 1701
UV 9xx
PLL
+5V
+12V
5VAS
+12AS
+33V
FOR /19 /39
SAF 1721
SAF 1720
7720 TDA98xx
INTERNAL REFERENCE VOLTAGE
3 - stage IF-amplifier
TRAVELING WAVE DIVIDER
VCO
AFC
FREQUENCY DETECTOR AND PHASE DETECTOR
VIDEO DEMODULATOR
VIDEO AMPLIFIER
AF AMPLIFIER
FM-PLL
TUNER AGC
IF AGC
AGC DETECTOR
BUFFER AND NOISE CLIPPING
AFC ADJ.
5725
3623
7727
ISB1
SECAM
3741 PLL
3742 ACC
1740
1745
NOT FOR SECAM-L
NOT FOR SECAM
7721,7723
ONLY FOR PAL
ONLY FOR SECAM L AND MULTISTANDARD
7840 TDA9830
SUPPLY BANDGAP
AGC CONTR.
AGC DET.
1821
7823
ISB1
2846
2844
5728
SDA(DE)
SCL(DE)
AGC(DE)
PSS(DE)
VFV(IO)
+12A (DE)
+5VAS (VS)
SB1(DE)
TO FV
AFC(DC)
AFV(IO)
CSP CHROMA SECAM PROCESSING
CSYNC
+5VPB
7207
7520 TDA4725
T 7200
4.3MHz
15 dB
10nF
1.07MHz
10 dB
LF-CLOCHE/ANTICLOCHE
5207
CLOCHE 4.3MHz
V ref.
POWER
6 dB
GATE
CHRS
ANTICLOCHE 4.286MHz
5202
x2
5211
2.14MHz
3053
3121
SOLDERED ON NFB4
NFB4 - VS
LUMINANCE PROCESSING, CHROMA PROCESSING PAL BG
Y-PB LEVEL
3039
LA7391A 7501
SP/LP
IHP1
4.43MHz
VXO XO
MAIN
FM DEMOD.
DOUBLE LIMITER
PHASE SHIFTER
321xfH PLL
627kHz
5.06MHz
SYNC
PB REC 4.43MHz
BURST EMPH. DEEMP.
ACC
5.06MHz
W/D CLIP
Y/C MIX
NOT FOR SECAM
COMB FILTER
1603
PB AMPL KILLER B. DEEMPH
PICTURE CONTROL
NL
E-E
SHP
PB REC 3.5MHz
D.O.COMP LINE NOISE CANCELLER
DETAIL ENHANC
MAIN EMPH
NLC
W/D CLIP
FM MOD.
3020 DEVIATION
3018 SYNC FREQ.
AGC DET
SYNC SEP
7004 64µs CCD
1002 800mA
7000
SHIFT REGISTER
1501
3098 SECAM REC CURRENT
3096 PAL CHR. WRITING CURRENT
3099 FM REC CURRENT
SOFT1
SOFT2
TAPE
Y-REC
FMR
FM
CIN
MES
EE LEVEL
3010
VMUTE
NCAN-S
CROT(DE)
DO(DE)
LP(DE)
FFP(DE)
VSB(I/O)
VBS(I/O)
CSYNC(CSP,DE)
NFM
SOLDERED ON NFB4
FMPV
FMRV
1911,9
1911,2
1910
1102
TO LHA
TO VS, CSP, IO, NIO
FMRV/SF
FMPV/SF
TRIV(DE)
HP1(DE)
HSC(DE)
REV(AL)
TRIV (DE)
ENVC(DE)
REV(LHA)
IREV(DE)
AMLP(IO)
IRAL (DE)
MTA(DE)
IPAL(DE)
LP(DE)
AMLR(IO)
TO ALDE,FV
TO LHA, AL VS, CSP, IO
NIO
26
21
13
14
11
28
27
31
32

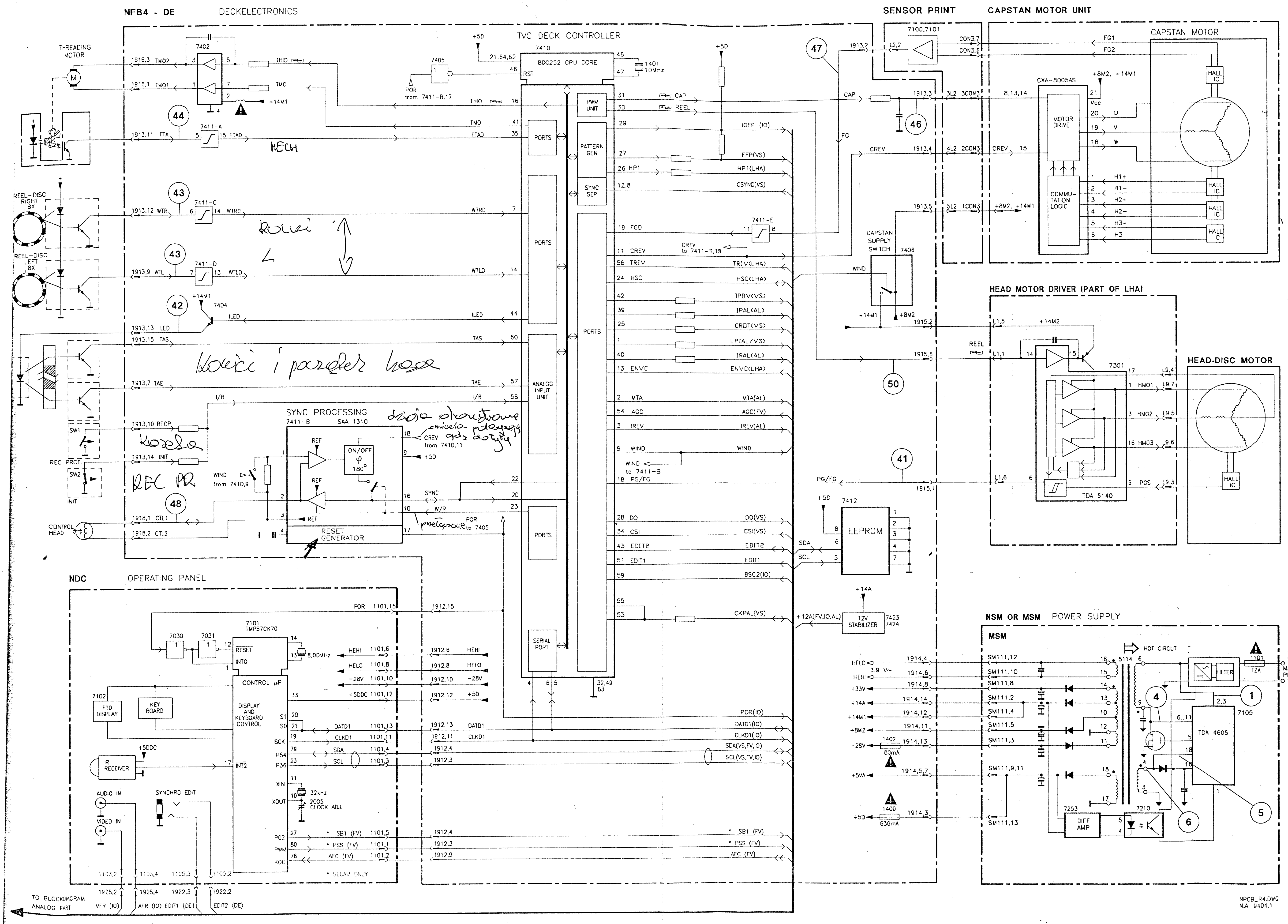
⇨ MAIN SIGNAL PATH RECORD+ PLAYBACK

➡ MAIN SIGNAL PATH RECORD

⇨ MAIN SIGNAL PATH PLAYBACK

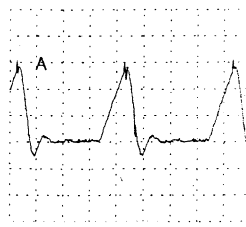

LHA
HEAD AMPLIFIER
TO HEAD
7050 TEA5704
FMRV/SP(VS)
FMPV/SP(VS)
TRIV(DE)
HP1(DE)
HSC(DE)
REV(AL)
L6,9
L6,2
L6,6
L6,8
L6,7
L6,4
HSC
VREC
L10A,4
L10A,5
L10A,1
L10A,2
L10A,3
SHC
SH1
LHC
LH2
SH2
LHA 2/0,3/0
(for Standardplay)
(for Longplay)
LHA 4,0
ROTATING TRANSFORMER
HEAD-DISC
SH1 SHC SH2 LH2 LHC LH1
L10B,9
L10B,8
L10B,7
L10B,6
L10B,5
L10B,4
7050 TEA5703
REV
HP1
-REC-
NORMAL PLAY
LONG PLAY
FMRV/LP
FMPV/LP
-PLB-
AGC
TRIV (DE)
TRIV
ENVC(DE)
L6,5 ENVC
1.07MHz
LF-CLOCHE/ ANTICLOCHE
5207
GATE
CHRS
4.3MHz
5202
3121
3053
EF
PAL BG
0203,3
0202,3
0202,2
0203,2
0203,1
3098 SECAM REC CURRENT
FM
21
1MHz
PB
REC
3096 PAL CHR. WRITING CURRENT
CIN
3099 FM REC CURRENT
Y-REC
FMR
11
NFM
SOLDERED ON NFB4
1911,9
FMPV
SOFT1
SOFT2
TAPE
+5VAS
1911,2
FMRV
1911
1910
1102
TO LHA
TO VS, CSP, IO, NIO
MES
1501
SHIFT REGISTER
CLKD (DE,IO)
STROBE (DE,IO)
AFC(DC)
TO AL,DE,FV
ONLY FOR PAL
5VAS
SUPPLY BANDGAP
AGC CNTR.
AGC DET.
2846
2844
AFV(IO)
27
TO FV
NFB4 - AL AUDIO LINEAR
REV(LHA)
IREV(DE)
AMLP(IO)
31
IRAL (DE)
MTA(DE)
IPAL(DE)
LP(DE)
AMLR(IO)
32
TO LHA, AL VS, CSP, IO
NIO
+12A
7607
not for dubbing
MAIN ERASE OSCILLATOR
7612
Only for dubbing
5602
AUDIO ERASE OSCILLATOR
7609
1919,3
1919,2
1918,4
1918,3
MAIN ERASE HEAD
AUDIO LINEAR ERASE HEAD
7601 LA7282
MUTE CTL
EE/PB LEVEL
EP CTL
REC/EE CTL
AMP
MUTE
POWER MUTE
ALC
REC EE
PB
ALC DET.
2609
3606
PB-LEVEL
EQ
BIAS
3618
34
3617
3600
1918,7
1918,5
AUDIO LINEAR REC/PB HEAD
NPCB_L4.DWG N.A. 9404.1
TO BLOCKDIAGRAMM DECKELECTRONICS POWER SUPPLY OPERATING PANEL

BLOCK DIAGRAM DIGITAL PART N4


NFB4 - DE
DECKELECTRONICS
THREADING MOTOR
1916,3 TMO2
1916,1 TMO1
7402
THIO
TMO
+14M1
44
7411-A
1913,11 FTA
FTAD
MECH
REEL-DISC RIGHT 8X
REEL-DISC LEFT 8X
43
7411-C
1913,12 WTR
WTRD
Rolki
43
7411-D
1913,9 WTL
WTLD
42
7404
ILED
1913,13 LED
1913,15 TAS
Kółki i pasek hosa
1913,7 TAE
I/R
SW1
1913,10 RECP
Kozła
REC. PROT.
1913,14 INIT
SW2
INIT
REC PR
48
CONTROL HEAD
1918,1 CTL1
1918,2 CTL2
SYNC PROCESSING
7411-B SAA 1310
REF
ON/OFF φ 180°
WIND from 7410,9
RESET GENERATOR
dioda odwrotnie
świeci - podaje gdy dotyka
CREV from 7410,11
+5D
SYNC
W/R
POR to 7405
przełącznie
TVC DECK CONTROLLER
7410
BDC252 CPU CORE
RST
1401 10MHz
7405
POR from 7411-B,17
PWM UNIT
PORTS
PATTERN GEN
SYNC SEP
ANALOG INPUT UNIT
SERIAL PORT
CAP
REEL
IOFP (IO)
FFP(VS)
HP1(LHA)
CSYNC(VS)
7411-E
FGD
CREV to 7411-B,18
TRIV(LHA)
HSC(LHA)
IPBV(VS)
IPAL(AL)
CRDT(VS)
LP(AL/VS)
IRAL(AL)
ENVC(LHA)
MTA(AL)
AGC(FV)
IREV(AL)
WIND
WIND to 7411-B
PG/FG
DO(VS)
CSI(VS)
EDIT2
EDIT1
8SC2(IO)
CKPAL(VS)
SENSOR PRINT
7100,7101
47
46
CAPSTAN MOTOR UNIT
CAPSTAN MOTOR
CXA-8005AS
MOTOR DRIVE
COMMU-TATION LOGIC
HALL IC
FG1
FG2
U V W
H1+ H1- H2+ H2- H3+ H3-
CAPSTAN SUPPLY SWITCH
7406
+14M1
+8M2
50
HEAD MOTOR DRIVER (PART OF LHA)
7301
TDA 5140
HMO1
HMO2
HMO3
POS
HEAD-DISC MOTOR
41
7412
EEPROM
SDA
SCL
12V STABILIZER
7423 7424
+12A(FV,IO,AL)
NSM OR MSM POWER SUPPLY
MSM
HOT CIRCUIT
MAINS PLUG
FILTER
1101 T2A
TDA 4605
7105
7253 DIFF AMP
7210
5114
1400 630mA
1402 80mA
NDC
OPERATING PANEL
7101 TMP87CK70
7030
7031
RESET
CONTROL µP
DISPLAY AND KEYBOARD CONTROL
8,00MHz
7102 FTD DISPLAY
KEY BOARD
IR RECEIVER
+5DDC
AUDIO IN
VIDEO IN
SYNCHRO EDIT
32kHz
2005 CLOCK ADJ.
HEHI
HELO
-28V
+5D
DATD1
CLKD1
SDA
SCL
POR(IO)
DATD1(IO)
CLKD1(IO)
SDA(VS,FV,IO)
SCL(VS,FV,IO)
SB1 (FV)
PSS (FV)
AFC (FV)
* SECAM ONLY
TO BLOCKDIAGRAM ANALOG PART
VFR (IO)
AFR (IO) EDIT1 (DE)
EDIT2 (DE)
NPCB_R4.DWG
N.A. 9404,1

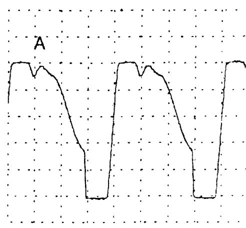
OSCILLOGRAM

A: DC, 0.2V/Div, 2us/Div



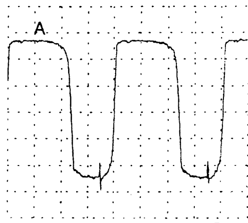
IC7105 Pin 2 Osc

A: DC, 0.1kV/Div, 2us/Div



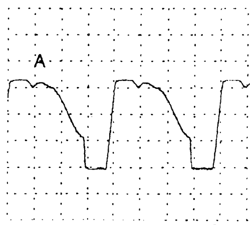
IC7105 Pin 6..11 Osc

A: DC, 0.2V/Div, 2us/Div



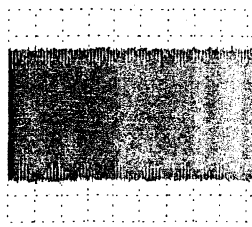
IC7105 Pin 18 Osc

A: DC, 10V/Div, 2us/Div



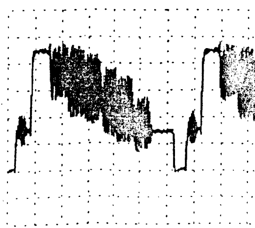
Trafo 5114 Pin 4 Osc

A: AC, 0.2 V/Div , 2 us/Div



IC7051 Pin 40 Osc.

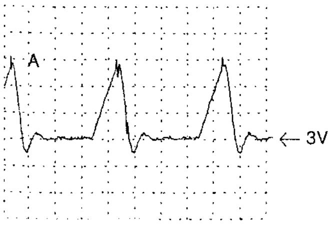
A: DC, 0.5 V/Div 10 us/Div



IC 7051 Pin 34 Osc.
VSB

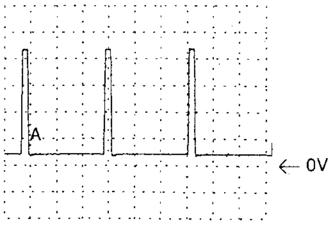
OSCILLOGRAMS BLOCK DIAGRAM

A: DC, 0.2V/Div, 2us/Div



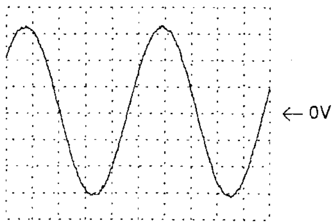
IC7105 Pin 2 Osc. 1

A: DC, 1.0 V/Div , 20 us/Div



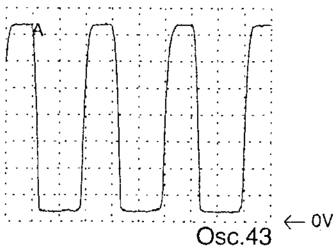
IC7051 Pin 32 Osc.14

A: DC, 0.2 V/Div, 0.2 ms/Div



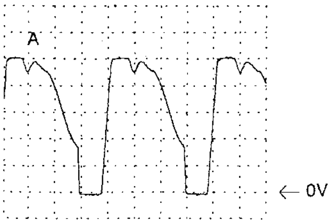
Capacitor 2611
AMLP Osc.31

A: DC, 0.5 V/Div, 2 ms/Div



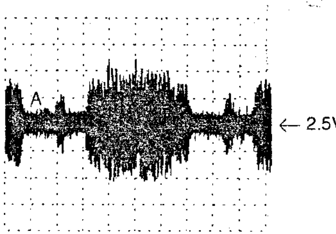
Osc.43

A: DC, 0.1kV/Div, 2us/Div



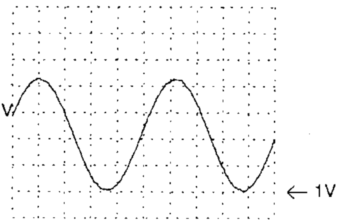
IC7105 Pin 6..11 Osc. 4

A: AC, 0.2 V/Div , 10 us/Div



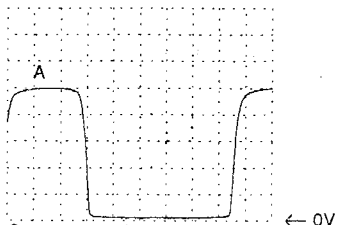
IC7051 Pin 15
(measured in play) Osc.21

A: DC, 0.2 V/Div, 0.2 ms/Div



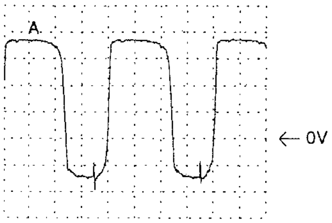
Resistor 3611
AMLR Osc.32

A: DC, 1 V/Div, 2 ms/Div



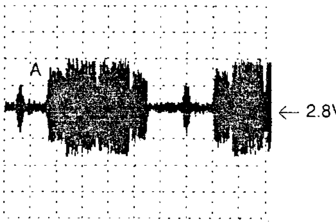
Connector 1913,11
FTA Threading Osc.44

A: DC, 0.2V/Div, 2us/Div



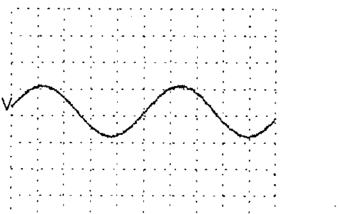
IC7105 Pin 18 Osc. 5

A: AC, 0.1 V/Div , 10 us/Div



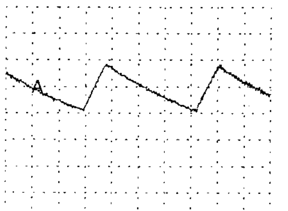
IC7051 Pin 15 Osc.21

A: DC, 1 V/Div, 0.2 ms/Div



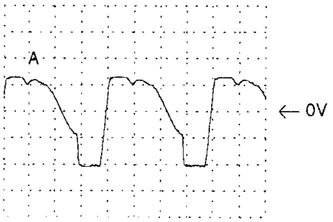
IC 7601 Pin 17 Osc.34

A: DC, 0.2 V/Div, 10 us/Div



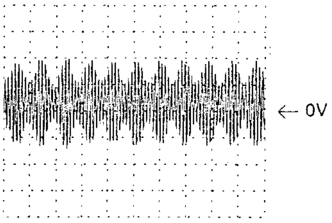
Connector 1913,3
CAP Osc.46

A: DC, 10V/Div, 2us/Div



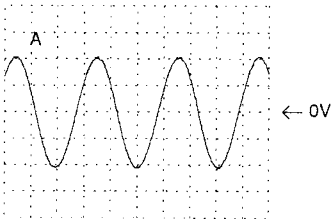
Trafo 5114 Pin 4 Osc. 6

A: DC, 0.1 V/Div 0.2 us/Div



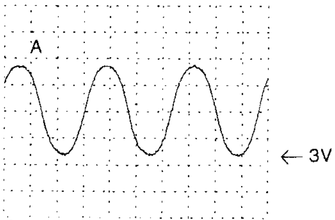
Tuner 1701 Pin 177 Osc.26

A: DC, 10 V/Div, 5 us/Div



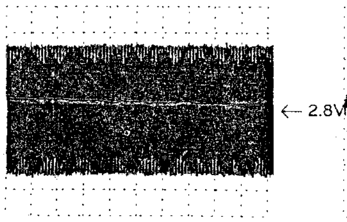
Connector 1919,2
Main erase head Osc.35
1)

A: AC, 0.5 V/Div, 0.2 ms/Div



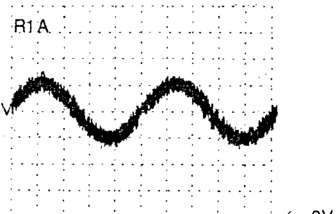
Connector 1913,2
FG Osc.47

A: AC, 0.2 V/Div , 2 us/Div



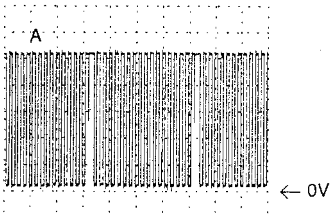
IC7051 Pin 40 Osc.11

A: DC, 0.5 V/Div 0.2 ms/Div



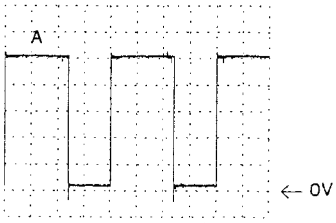
IC 7720 Pin 9
AFV Osc.27

A: DC, 1 V/Div, 10 ms/Div



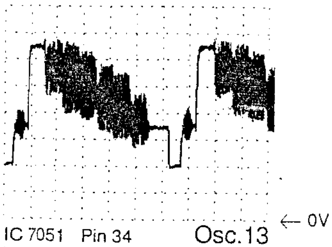
Connector 1915,1
PG/FG Osc.41

A: DC, 1 V/Div, 10 ms/Div



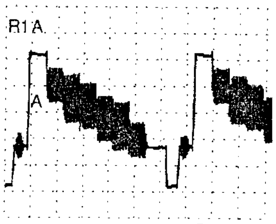
IC 7411 Pin 2
CTL1 REC Osc.48

A: DC, 0.5 V/Div 10 us/Div



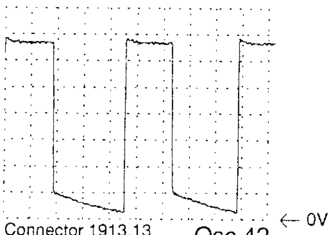
IC 7051 Pin 34
VSB Osc.13

A: DC, 0.2 V/Div 10 us/Div



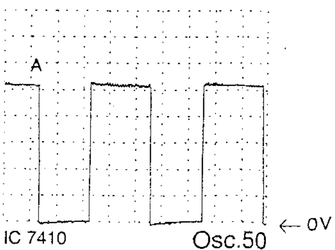
Osc.28

A: DC, 0.5 V/Div, 0.5 ms/Div



Connector 1913,13
LED Osc.42

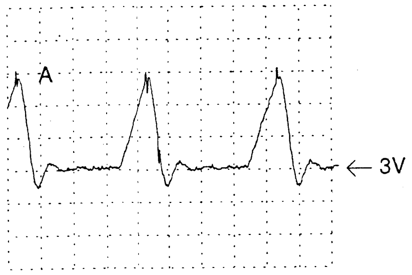
A: DC, 1 V/Div, 10 us/Div



IC 7410
REEL Osc.50

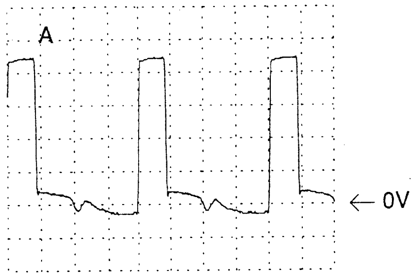
OSCILLOGRAMS POWER SUPPLY MSM1

A: DC, 0.2V/Div, 2us/Div



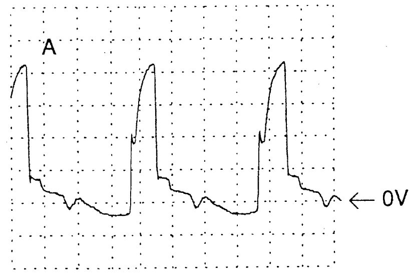
IC 7105/7110 Pin 2 Osc. 1

A: DC, 2V/Div, 2us/Div



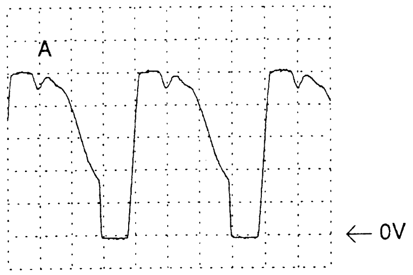
IC 7105 Pin 15 Osc. 2

A: DC, 2V/Div, 2us/Div



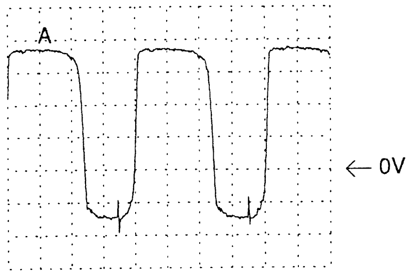
IC 7105 Pin 14 Osc. 3

A: DC, 0.1kV/Div, 2us/Div



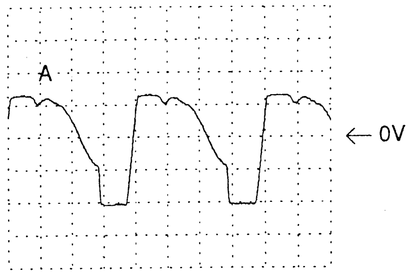
IC 7105 Pin 6..11 Osc. 4

A: DC, 0.2V/Div, 2us/Div



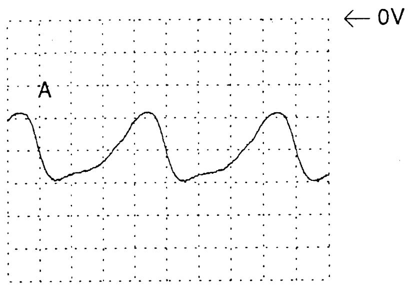
IC 7105 Pin 18 Osc. 5

A: DC, 10V/Div, 2us/Div



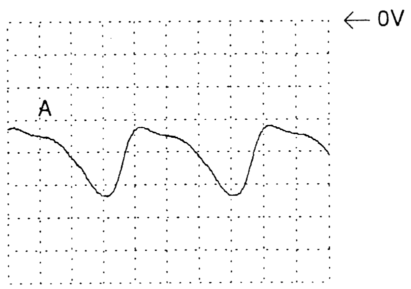
Trafo 5114 Pin 4 Osc. 6

A: DC, 5V/Div, 2us/Div



Connector SM1,12 Osc. 7
HELO

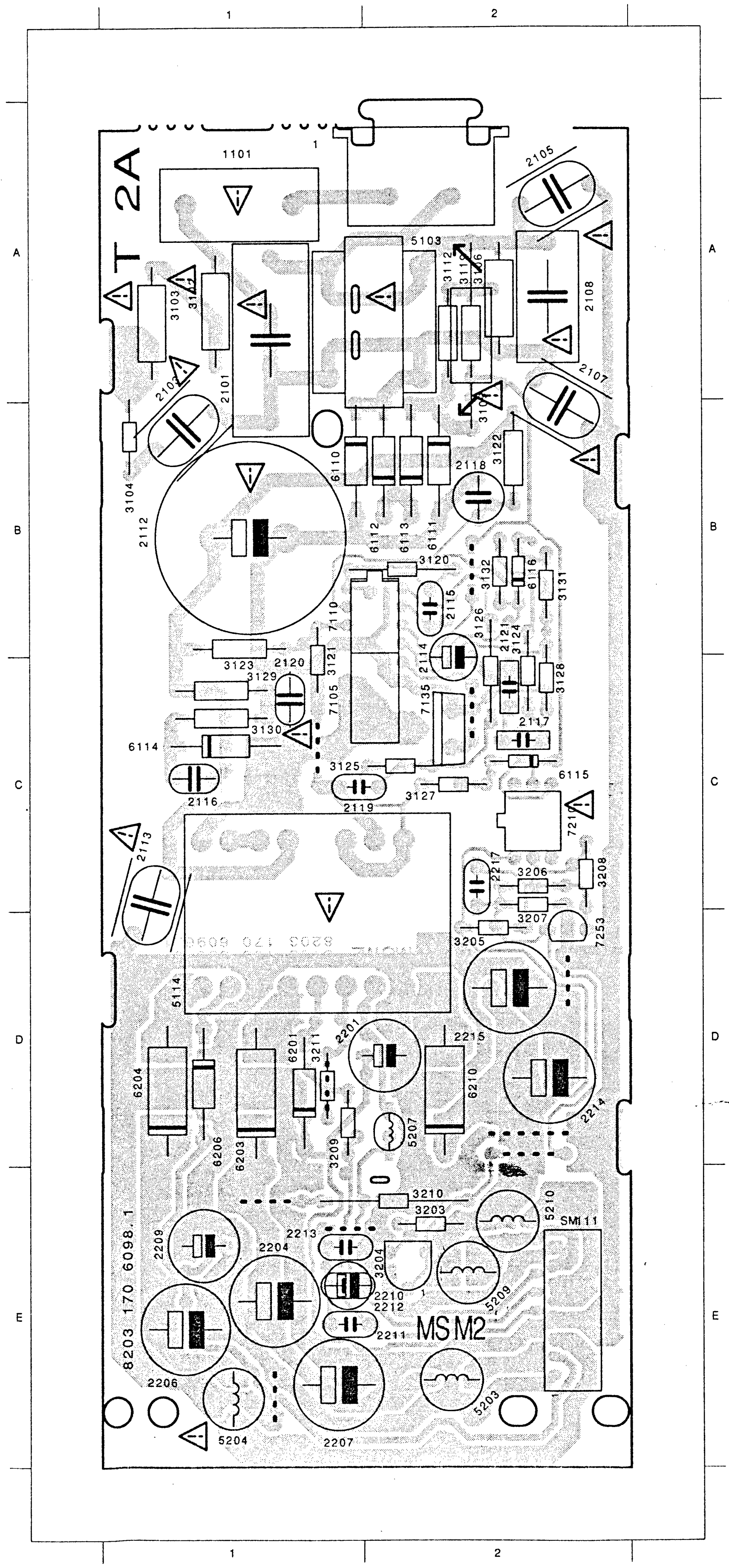
A: DC, 5V/Div, 2us/Div



Connector SM1,10 Osc. 8
HEHI

REMARKS :

POWER SUPPLY MSM1


1
2
A
B
C
D
E
2A T
1101
1
5103
2105
2107
2108
3103
3102
2101
2103
3112
3119
3106
3109
3104
2112
6110
6112
6113
6111
2118
3122
3120
3132
6116
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2115
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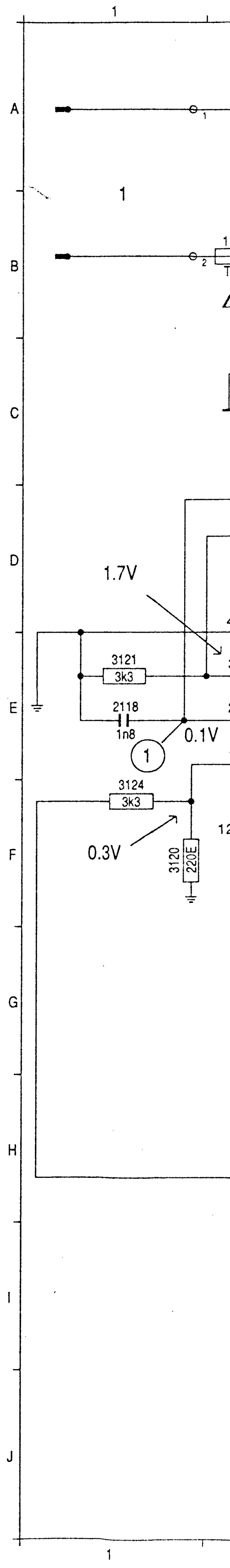
3124
7110
3123
2120
3129
3121
7105
2114
7135
3128
2117
3130
6114
3125
2119
3127
6115
2116
7210
2113
2217
3206
3208
3207
3205
7253
5114
8203 170 6098
6204
6201
3211
2201
2215
6206
6203
3209
5207
6210
2214
3210
3203
5210
SM111
2209
2204
2213
3204
2210
2212
2211
MS M2
5209
8203 170 6098.1
2206
5204
2207
5203

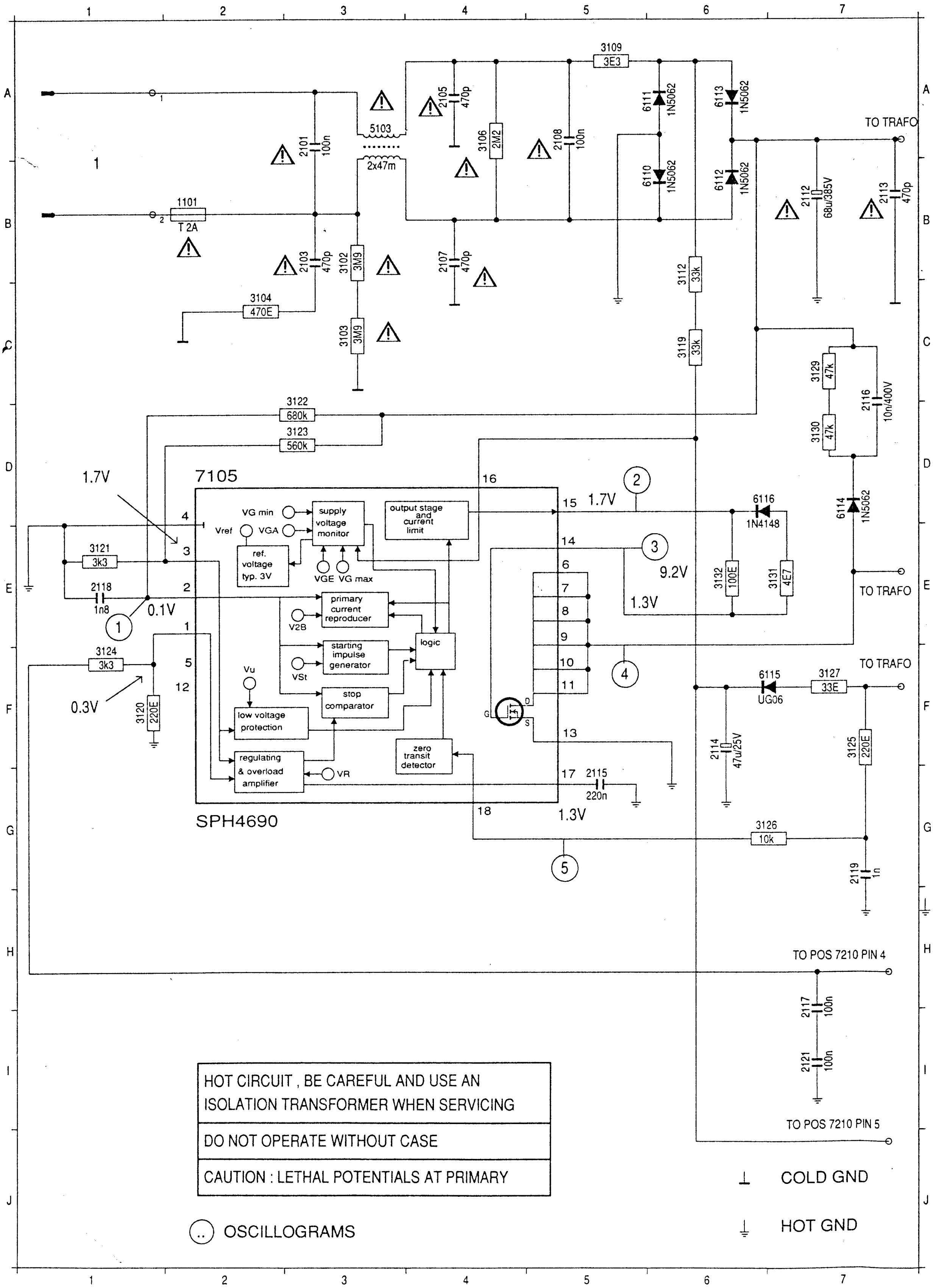
1	A	2
1101	A	1
2101	B	1
2103	B	1
2105	A	2
2107	B	2
2108	A	2
2112	B	1
2113	D	1
2114	C	2
2115	B	2
2116	C	1
2117	C	2
2118	B	2
2119	C	1
2120	C	1
2121	C	2
2201	D	2
2204	E	1
2206	E	1
2207	E	1
2209	E	1
2210	E	1
2211	E	1
2212	E	1
2213	E	1
2214	D	2
2215	D	2
2217	C	2
3102	A	1
3103	A	1
3104	B	1
3106	A	2
3109	A	2
3112	A	2
3119	A	2
3120	B	2
3121	C	1
3122	B	2
3123	B	1
3124	C	2
3125	C	2
3126	C	2
3127	C	2
3128	C	2
3129	C	1
3130	C	1
3131	B	2
3132	B	2
3203	E	2
3204	E	2
3205	D	2
3206	C	2
3207	C	2
3208	C	2
3209	D	1
3210	E	2
3211	D	1
5103	A	1
5114	D	1
5203	E	2
5204	E	1
5207	D	2
5209	E	2
5210	E	2
6110	B	1
6111	B	2
6112	B	2
6113	B	2
6114	C	1
6115	C	2
6116	B	2
6201	D	1
6203	D	1
6204	D	1
6206	D	1
6210	D	2
7105	B	1
7110	B	2
7135	C	2
7210	C	2
7253	D	2
9001	B	2
9003	E	1
9004	D	2
9005	D	2
9006	E	1
9007	D	2
9008	C	1
9009	C	2
9010	D	1
9011	E	1
SM111	E	2

POWER SUPPL
(Version with SPH4


1
A
B
C
D
E
F
G
H
I
J
1
1.7V
3121
3k3
2118
1n8
0.1V
1
3124
3k3
0.3V
3120
220E
1

POWER SUPPLY MSM
(Version with SPH4690 IC7105, primary part)

E 1
D 2
C 1
C 2
D 1
E 1
E 2


1
2
3
4
5
6
7
A
B
C
D
E
F
G
H
I
J
1101
T 2A
2101
100n
2103
470p
3104
470E
5103
2x47m
3102
3M9
3103
3M9
2105
470p
2107
470p
3106
2M2
2108
100n
3109
3E3
6111
1N5062
6110
1N5062
6113
1N5062
6112
1N5062
3112
33k
3119
33k
2112
68u/385V
2113
470p
TO TRAFO
3129
47k
3130
47k
2116
10n/400V
6114
1N5062
3122
680k
3123
560k
7105
1.7V
4
3
2
1
5
12
16
15
14
6
7
8
9
10
11
13
17
18
3121
3k3
2118
1n8
0.1V
①
3124
3k3
0.3V
3120
220E
Vref
VG min
VGA
supply voltage monitor
ref. voltage typ. 3V
VGE
VG max
output stage and current limit
primary current reproducer
V2B
starting impulse generator
VSt
Vu
stop comparator
logic
low voltage protection
regulating & overload amplifier
VR
zero transit detector
G
D
S
SPH4690
②
1.7V
③
9.2V
1.3V
④
6116
1N4148
3132
100E
3131
4E7
TO TRAFO
TO TRAFO
6115
UG06
3127
33E
2114
47u/25V
3125
220E
2115
220n
1.3V
3126
10k
⑤
2119
1n
TO POS 7210 PIN 4
2117
100n
2121
100n
TO POS 7210 PIN 5

HOT CIRCUIT , BE CAREFUL AND USE AN ISOLATION TRANSFORMER WHEN SERVICING
DO NOT OPERATE WITHOUT CASE
CAUTION : LETHAL POTENTIALS AT PRIMARY

(..) OSCILLOGRAMS

⊥ COLD GND

⏚ HOT GND

1 B
1101
2101
2103
2105
2107
2108
2112
2113
2114
2115
2116
2117
2118
2119
2121
3102
3103
3104
3106
3109
3112
3119
3120
3121
3122
3123
3124
3125
3126
3127
3129
3130
3131
3132
5103
6110
6111
6112
6113
6114
6115
6116
7105

Dioda 6130

40W

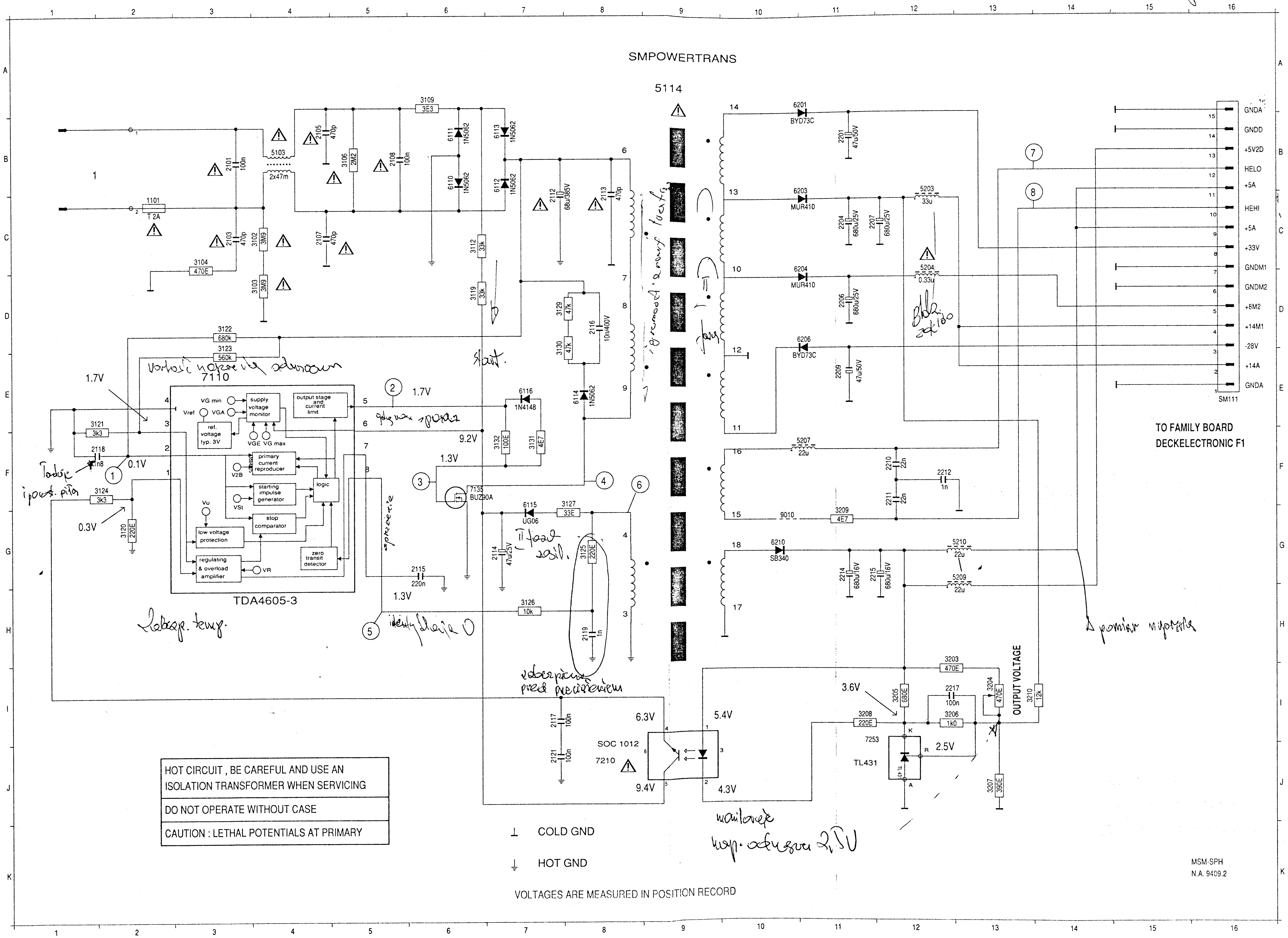
od 175 V
265 V

H - 20 do 220 kHz

78% sprawności

POWER SUPPLY MSM

(Version with TDA4605 IC7110)


SMPOWERTRANS
5114
TDA4605-3
7110
supply voltage monitor
output stage and current limit
ref. voltage typ. 3V
primary current reproducer
starting impulse generator
logic
stop comparator
low voltage protection
regulating & overload amplifier
zero transit detector
VG min
VGA
Vref
VGE
VG max
V2B
VSt
Vu
VR
1.7V
0.1V
0.3V
9.2V
1.3V
6.3V
9.4V
5.4V
4.3V
3.6V
2.5V
7135 BUZ90A
SOC 1012
7210
7253
TL431
1101 T 2A
5103 2x47m
3109 3E3
6111 1N5062
6110 1N5062
6113 1N5062
6112 1N5062
6114 1N5062
6116 1N4148
6115 UG06
6201 BYD73C
6203 MUR410
6204 MUR410
6206 BYD73C
6210 SB340
5203 33u
5204 0.33u
5207 22u
5209 22u
5210 22u
9010
GNDA
GNDD
+5V2D
HELO
+5A
HEHI
+33V
GNDM1
GNDM2
+8M2
+14M1
-28V
+14A
SM111
TO FAMILY BOARD
DECKELECTRONIC F1
OUTPUT VOLTAGE
start
zabezp. temp.
identyfikacja 0
II faza zasil.
zabezpieczenie przed przeciążeniem
napięcie odniesienia 2,5V
pomiar napięcia
MSM-SPH
N.A. 9409.2

HOT CIRCUIT , BE CAREFUL AND USE AN ISOLATION TRANSFORMER WHEN SERVICING

DO NOT OPERATE WITHOUT CASE

CAUTION : LETHAL POTENTIALS AT PRIMARY

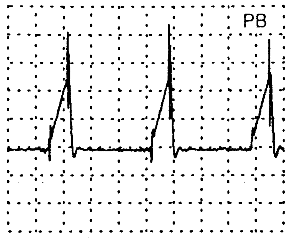
⊥ COLD GND

⏚ HOT GND

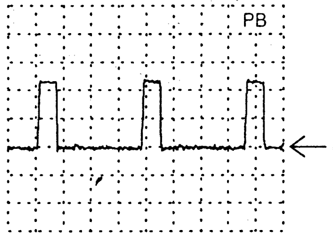
VOLTAGES ARE MEASURED IN POSITION RECORD

1	B 1
1101	C 2
2101	B 3
2103	C 3
2105	B 4
2107	C 4
2108	B 5
2112	C 7
2113	C 8
2114	G 7
2115	G 6
2116	D 8
2117	I 7
2118	F 2
2119	H 8
2121	J 7
2201	B11
2204	C11
2206	D11
2207	C11
2209	E11
2210	F12
2211	F12
2212	F12
2214	G11
2215	G11
2217	I12
3102	C 4
3103	D 4
3104	C 3
3106	B 5
3109	A 6
3112	C 6
3119	D 6
3120	G 2
3121	E 2
3122	D 3
3123	D 3
3124	F 2
3125	G 8
3126	H 7
3127	F 8
3129	D 7
3130	D 7
3131	F 7
3132	F 7
3203	H12
3204	I13
3205	I12
3206	I12
3207	J13
3208	I11
3209	G11
3210	I13
5103	B 4
5114	A 9
5203	C12
5204	D12
5207	F11
5209	G13
5210	G13
6110	B 6
6111	B 6
6112	B 7
6113	B 7
6114	E 8
6115	G 7
6116	E 7
6201	A11
6203	C11
6204	D11
6206	D11
6210	G10
7110	E 3
7135	F 6
7210	J 8
7253	J11
9010	G10
SM111	E16

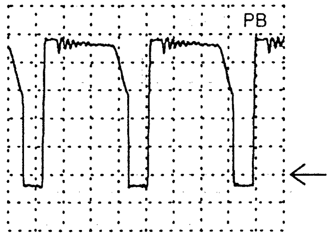
POWER SUPPLY NSM1



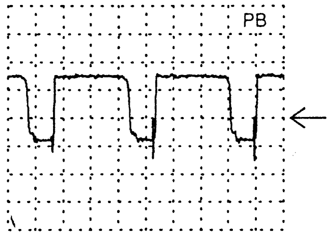
AC, 200mV/Div, 2us/Div
IC 7005/7007 Pin 2
①



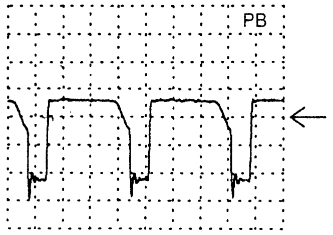
DC, 5 V/Div, 2us/Div
IC 7005 Pin 5/IC 7007 Pin 14,15
②



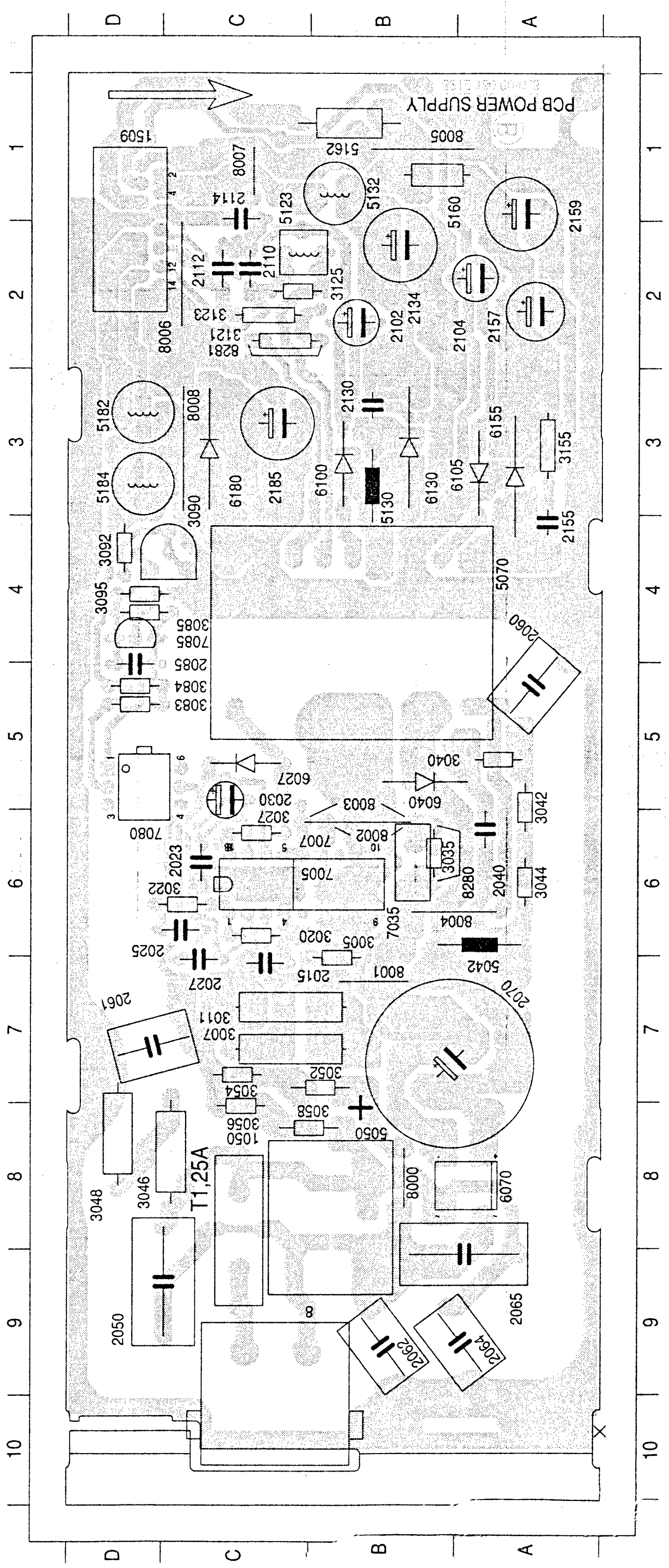
AC, 100 V/Div, 2us/Div
T 7035 DRAIN/IC 7007 Pin 6-11
④



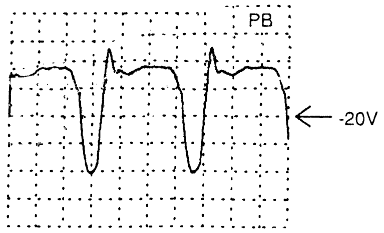
DC, 500mV/Div, 2us/Div
IC 7005 Pin8/IC 7007 Pin18
⑤



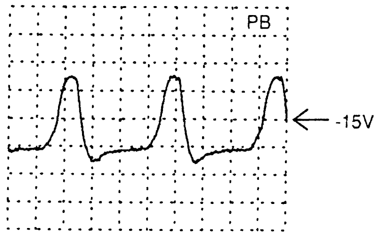
DC, 20 V/Div, 2us/Div
5070 Pin 1
⑥


PCB POWER SUPPLY
A
B
C
D
1
2
3
4
5
6
7
8
9
10
1509
8007
5162
8005
2114
5123
5132
5160
2159
2112
2110
3125
2102
2134
2104
2157
3123
3121
8281
8006
5182
5184
8008
2130
6155
3155
3090
6180
2185
6100
5130
6130
6105
2155
3092
3095
5070
3085
7085
2085
3084
3083
2060
6027
3040
2030
3027
8003
6040
3042
7080
8002
7007
2023
3022
7005
3035
8280
2040
3044
8004
2025
3005
3020
7035
5042
2027
2015
8001
2061
3011
3007
2070
3052
3054
3056
3058
1050
5050
3048
3046
T1,25A
8000
6070
2050
2062
2064
2065
8

8	C 9	7007	C 6
1050	C 8	7035	B 6
1509	D 2	7080	D 5
2015	C 7	7085	D 4
2023	C 6	8000	B 8
2025	C 6	8001	B 7
2027	C 7	8002	B 6
2030	C 5	8003	B 6
2040	A 6	8004	B 6
2050	D 9	8005	B 1
2060	A 5	8006	C 2
2061	D 7	8007	C 1
2062	B 9	8008	C 3
2064	A 9		
2065	A 9		
2070	B 7		
2085	D 5		
2102	B 2		
2104	A 2		
2110	C 2		
2112	C 2		
2114	C 2		
2130	B 3		
2134	B 2		
2155	A 4		
2157	A 2		
2159	A 1		
2185	C 3		
3005	B 7		
3007	C 7		
3011	C 7		
3020	C 6		
3022	C 6		
3027	C 6		
3035	B 6		
3040	A 5		
3042	A 6		
3044	A 6		
3046	C 8		
3048	D 8		
3052	B 7		
3054	C 7		
3056	C 8		
3058	C 8		
3083	D 5		
3084	D 5		
3085	D 4		
3090	C 4		
3092	D 4		
3095	D 4		
3121	C 2		
3123	C 2		
3125	C 2		
3155	A 3		
5042	A 6		
5050	B 8		
5070	B 4		
5123	C 2		
5130	B 3		
5132	B 1		
5160	B 1		
5162	B 1		
5182	D 3		
5184	D 3		
6027	C 5		
6040	B 5		
6070	A 8		
6100	B 3		
6105	A 3		
6130	B 3		
6155	A 3		
6180	C 3		
7005	C 6		

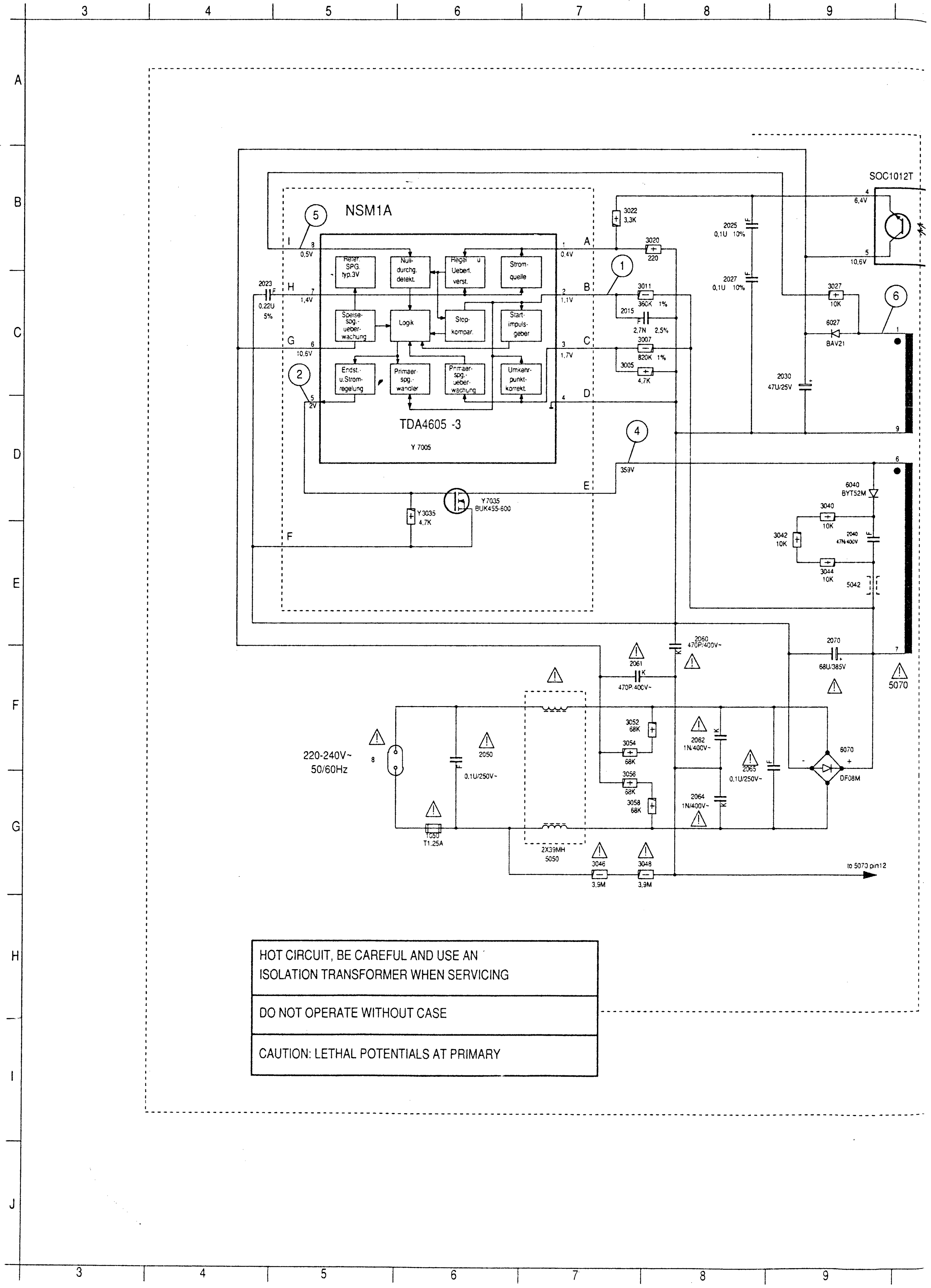


AC, 2 V/Div, 2us/Div
Connector 1509 Pin 12 (HELO)
⑦



AC, 5 V/Div, 2us/Div
Connector 1509 Pin 10 (HEHI)
⑧

POWER SUPPLY NSM1
(Version with SPH4690 IC7005, primary part)


3
4
5
6
7
8
9
A
B
C
D
E
F
G
H
I
J
NSM1A
TDA4605 -3
Y 7005
Y7035
BUK455-600
Y3035
4,7K
SOC1012T
BAV21
BYT52M
DF06M
5070
220-240V~
50/60Hz
T1,25A
2X39MH
5050
to 5073 pin12
0,5V
1,4V
10,5V
2V
0,4V
1,1V
1,7V
359V
6,4V
10,6V

HOT CIRCUIT, BE CAREFUL AND USE AN ISOLATION TRANSFORMER WHEN SERVICING

DO NOT OPERATE WITHOUT CASE

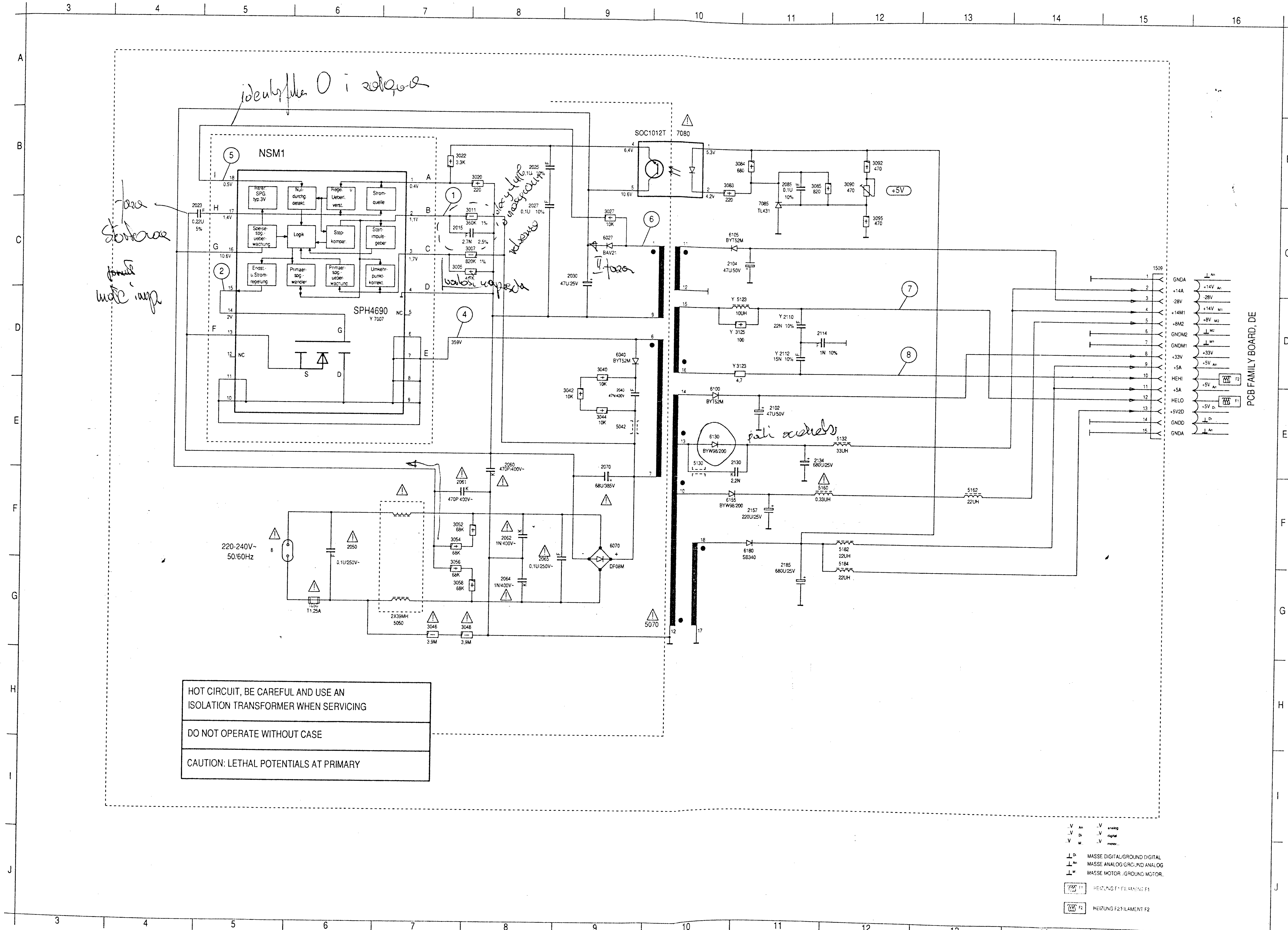
CAUTION: LETHAL POTENTIALS AT PRIMARY

Hz

POWER SUPPLY NSM1

(Version with SPH4690 IC7007)

1	B 1
1101	C 2
2101	B 3
2103	C 3
2105	B 4
2107	C 4
2108	B 5
2112	C 7
2113	C 8
2114	G 7
2115	G 6
2116	D 8
2117	I 7
2118	F 2
2119	H 8
2121	J 7
2201	B11
2204	C11
2206	D11
2207	C11
2209	E11
2210	F12
2211	F12
2212	F12
2214	G11
2215	G11
2217	I12
3102	C 4
3103	D 4
3104	C 3
3106	B 5
3109	A 6
3112	C 6
3119	D 6
3120	G 2
3121	E 2
3122	D 3
3123	D 3
3124	F 2
3125	G 8
3126	H 7
3127	F 8
3129	D 7
3130	D 7
3131	F 7
3132	F 7
3203	H12
3204	I13
3205	I12
3206	I12
3207	J13
3208	I11
3209	G11
3210	I13
5103	B 4
5114	A 9
5203	C12
5204	D12
5207	F11
5209	G13
5210	G13
6110	B 6
6111	B 6
6112	B 7
6113	B 7
6114	E 8
6115	G 7
6116	E 7
6201	A11
6203	C11
6204	D11
6206	D11
6210	G10
7110	E 3
7135	F 6
7210	J 8
7253	J11
9010	G10
SM111	E16


3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
NSM1
SPH4690
Y 7007
Refer. SPG. typ.3V
Null-durchg. detekt.
Regel. u. Uebert. verst.
Strom-quelle
Speise-spg.-ueber-wachung
Logik
Stop-kompar.
Start-impuls-geber
Endst.-u.Strom-regelung
Primaer-spg.-wandler
Primaer-spg.-ueber-wachung
Umkehr-punkt-korrekt.
NC
S
D
G
0.5V
1.4V
10.6V
2V
0.4V
1,1V
1,7V
359V
3022 3.3K
3020 220
3011 360K 1%
2015 2.7N 2.5%
3007 820K 1%
3005 47K
2025 0,1U 10%
2027 0,1U 10%
2023 0.22U 5%
2030 47U/25V
3027 10K
6027 BAV21
SOC1012T
7080
6,4V
10.6V
5.3V
4.2V
3084 680
3083 220
2085 0,1U 10%
3085 820
7085 TL431
3090 470
3092 470
3095 470
+5V
6105 BYT52M
2104 47U/50V
Y 5123 10UH
Y 3125 100
Y 2110 22N 10%
2114 1N 10%
Y 2112 15N 10%
Y 3123 4,7
6040 BYT52M
3040 10K
3042 10K
2040 47N/400V
3044 10K
5042
6100 BYT52M
2102 47U/50V
6130 BYW98/200
5130
2130 2,2N
2134 680U/25V
5132 33UH
6155 BYW98/200
2157 220U/25V
5160 0.33UH
5162 22UH
6180 SB340
2185 680U/25V
5182 22UH
5184 22UH
2060 470P/400V~
2070 68U/385V
2061 470P 400V~
3052 68K
3054 68K
3056 68K
3058 68K
2062 1N/400V~
2063 0.1U/250V~
2064 1N/400V~
6070 DF08M
220-240V~ 50/60Hz
2050 0.1U/250V~
1050 T1,25A
2X39MH 5050
3046 3.9M
3048 3.9M
5070
1509
GNDA
+14A
-28V
+14M1
+8M2
GNDM2
GNDM1
+33V
+5A
HEHI
+5A
HELO
+5V2D
GNDD
GNDA
+14V
-28V
+14V
+8V
+33V
+5V
+5V
+5V
F2
F1
PCB FAMILY BOARD, DE
.V An .V analog
.V D .V digital
.V M .V motor
MASSE DIGITAL/GROUND DIGITAL
MASSE ANALOG/GROUND ANALOG
MASSE MOTOR /GROUND MOTOR
HEIZUNG F1/FILAMENT F1
HEIZUNG F2/FILAMENT F2

identyfikator 0 i [illegible]

faza startowa

pomiar mocy impu

[illegible] napięcia

[illegible]

wartości napięcia

IV faza

pali [illegible]

HOT CIRCUIT, BE CAREFUL AND USE AN ISOLATION TRANSFORMER WHEN SERVICING

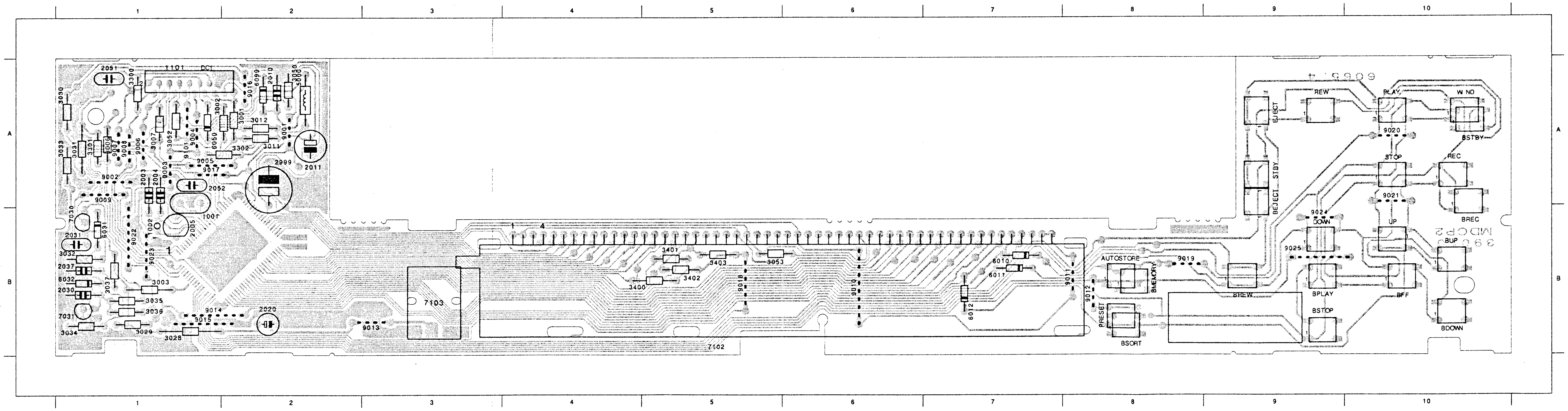
DO NOT OPERATE WITHOUT CASE

CAUTION: LETHAL POTENTIALS AT PRIMARY

1050	G6
1509	C15
2015	C7
2023	C4
2025	B8
2027	C8
2030	C9
2040	E9
2050	F6
2060	E8
2061	F7
2062	F8
2064	G8
2065	F8
2070	E9
2085	B11
2102	E11
2104	C10
2110	D11
2112	D11
2114	D11
2130	E11
2134	E11
2157	F11
2185	G11
3005	C7
3007	C8
3011	C8
3020	B8
3022	B7
3027	C9
3035	D6
3040	D9
3042	E9
3044	E9
3046	G7
3048	G8
3052	F7
3054	F7
3056	G7
3058	G7
3083	B10
3084	B11
3085	B11
3090	B12
3092	B12
3095	C12
3121	D10
3123	D11
3125	D11
5042	E9
5050	G7
5070	G10
5123	D11
5130	E10
5132	E12
5160	F11
5162	F13
5182	F12
5184	G12
6027	C9
6040	D9
6070	F9
6100	E10
6105	C10
6130	E10
6155	F10
6180	F11
7005	D6
7007	D7
7035	D6
7080	B10
7085	C11
8	F5

OPERATING PANEL MDCP2

1001	A	1
1002	B	1
2003	A	1
2004	A	1
2005	B	1
2010	A	2
2011	A	2
2020	B	2
2030	B	1
2031	B	1
2037	B	1
2051	A	1
2052	A	1
2999	A	2
3001	A	2
3002	A	2
3003	B	1
3006	A	1
3007	A	1
3011	A	2
3012	A	2
3028	B	1
3029	B	1
3030	A	1
3031	A	1
3032	B	1
3033	A	1
3034	B	1
3035	B	1
3036	B	1
3037	B	1
3050	A	2
3052	A	1
3053	B	5
3300	A	1
3301	A	1
3302	A	2
3400	B	5
3401	B	5
3402	B	5
3403	B	5
5000	A	2
6010	B	7
6011	B	7
6012	B	7
6031	B	1
6032	B	1
6050	A	1
6099	A	2
7030	B	1
7031	B	1
7102	B	5
7103	B	3
9001	A	2
9002	A	1
9003	A	1
9004	A	1
9005	A	1
9006	A	1
9007	A	1
9008	A	1
9009	A	1
9010	B	6
9011	B	8
9012	B	8
9013	B	3
9014	B	1
9015	B	1
9016	A	2
9017	A	1
9018	B	5
9019	B	8
9020	A	10
9021	A	10
9022	B	1
9023	B	1
9024	B	9
9025	B	9
9101	A	1
DC1	A	1
barcode	B	8


1
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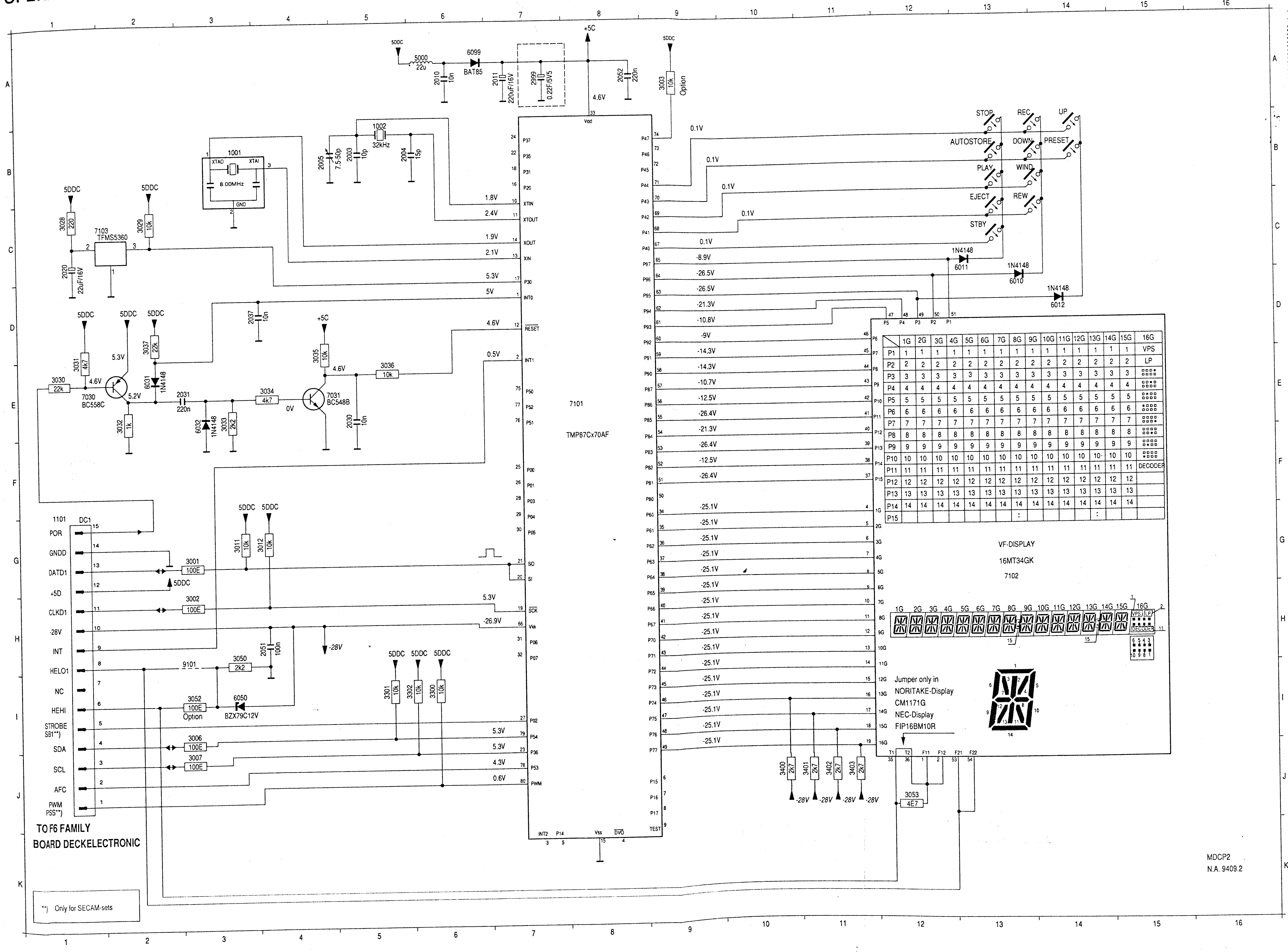
3
4
5
6
7
8
9
10
A
B
2051
1101
DC1
3300
3030
3033
3031
3301
3052
3002
3001
3012
3011
3302
9005
9017
2999
2011
2052
1001
2005
7030
9003
9002
9009
6031
2031
3032
2037
6032
2030
3037
3003
3035
3036
7031
3034
3029
3028
9014
9015
2020
9013
7103
7102
3401
3403
3053
3400
3402
9018
9010
6010
6011
6012
9011
9012
AUTOSTORE
BMEMORY
9019
PRESET
BSORT
BREW
EJECT
REW
PLAY
WIND
BSTBY
9020
STOP
REC
9021
BREC
BEJECT
STBY
9024
DOWN
UP
9025
BUP
BPLAY
BFF
BSTOP
BDOWN
MDCP2

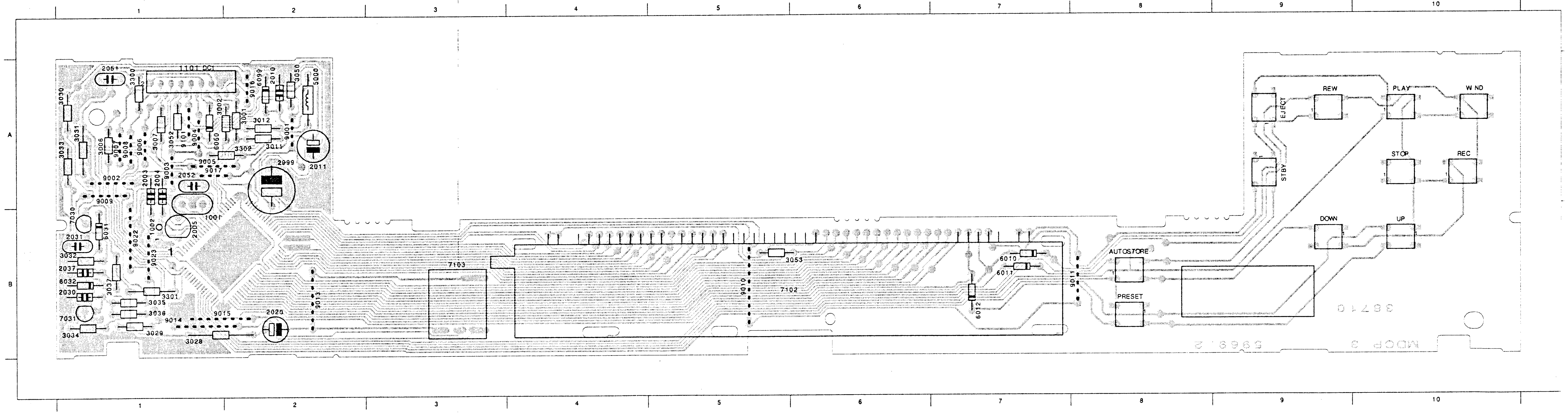
OPERATING PANEL MDCP2


5DDC
5000 22u
2010 10n
6099 BAT85
2011 220uF/16V
2999 0.22F/5V5
+5C
4.6V
2052 220n
3003 10k Option
1001 8.00MHz
XTAO
XTAI
GND
1002 32kHz
2005 7.5-50p
2003 10p
2004 15p
3028 220
3029 10k
7103 TFMS5360
2020 22uF/16V
2037 10n
3031 4k7
3037 22k
6031 1N4148
3030 22k
7030 BC558C
5.3V
5.2V
2031 220n
6032 1N4148
3032 1k
3033 2k2
3034 4k7
0V
3035 10k
7031 BC548B
3036 10k
2030 10n
7101
TMP87Cx70AF
1.8V
2.4V
1.9V
2.1V
5.3V
5V
4.6V
0.5V
Vdd
XTIN
XTOUT
XOUT
XIN
RESET
INT0
INT1
SO
SI
SCK
Vkk
PWM
Vss
DVO
TEST
STOP
REC
UP
AUTOSTORE
DOWN
PRESET
PLAY
WIND
EJECT
REW
STBY
0.1V
-8.9V
-26.5V
-21.3V
-10.8V
-9V
-14.3V
-10.7V
-12.5V
-26.4V
-25.1V
-26.9V
1N4148 6011
1N4148 6010
1N4148 6012
1101 DC1
POR
GNDD
DATD1
+5D
CLKD1
-28V
INT
HELO1
NC
HEHI
STROBE SB1**)
SDA
SCL
AFC
PWM PSS**)
3001 100E
3002 100E
3011 10k
3012 10k
9101
3050 2k2
2051 100n
3052 100E Option
6050 BZX79C12V
3006 100E
3007 100E
3301 10k
3302 10k
3300 10k
TO F6 FAMILY BOARD DECKELECTRONIC
*) Only for SECAM-sets
VF-DISPLAY
16MT34GK
7102
VPS
LP
DECODER
Jumper only in NORITAKE-Display CM1171G NEC-Display FIP16BM10R
3400 2k7
3401 2k7
3402 2k7
3403 2k7
3053 4E7
MDCP2
N.A. 9409.2

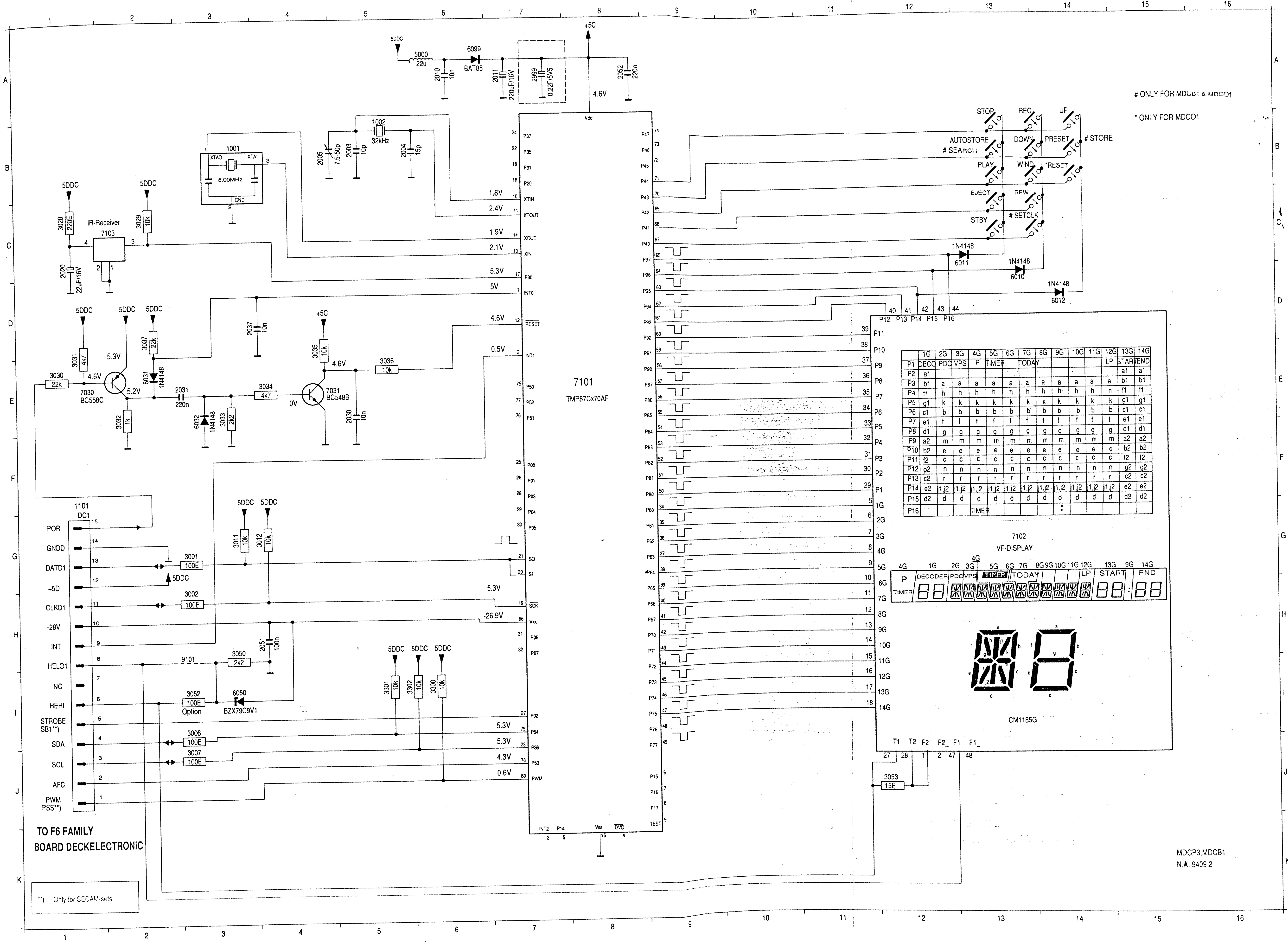
1001	B 3
1002	B 5
2003	B 5
2004	B 5
2005	B 4
2010	A 6
2011	A 7
2020	C 1
2030	E 5
2031	E 3
2037	D 3
2051	H 4
2052	A 8
2999	A 7
3001	G 3
3002	H 3
3003	A 9
3006	I 3
3007	J 3
3011	G 3
3012	G 4
3028	C 1
3029	C 2
3030	E 1
3031	E 1
3032	E 2
3033	E 3
3034	E 4
3035	D 4
3036	E 5
3037	D 2
3050	H 3
3052	I 3
3053	J12
3300	I 6
3301	I 5
3302	I 5
3400	J10
3401	J11
3402	J11
3403	J11
5000	A 6
6010	D13
6011	D13
6012	D14
6031	E 2
6032	E 3
6050	I 3
6099	A 6
7030	E 1
7031	E 4
7101	E 8
7102	G13
7103	C 1
9101	H 3
DC1	G 1
DOWN	B13
EJECT	C13
PLAY	B13
PRESE	B14
REC	B13
REW	C13
STBY	C13
STOP	B13
UP	B14
WIND	B13

OPERATING PANEL MDCP3, MDCB1

1001	A	1
1002	B	1
2003	A	1
2004	A	1
2005	B	1
2010	A	2
2011	A	2
2020	B	2
2030	B	1
2031	B	1
2037	B	1
2051	A	1
2052	A	1
2999	A	2
3001	A	2
3002	A	2
3006	A	1
3007	A	1
3011	A	2
3012	A	2
3028	B	1
3029	B	1
3030	A	1
3031	A	1
3032	B	1
3033	A	1
3034	B	1
3035	B	1
3036	B	1
3037	B	1
3050	A	2
3052	A	1
3053	B	5
3300	A	1
3301	B	1
3302	A	2
5000	A	2
6010	B	7
6011	B	7
6012	B	7
6031	B	1
6032	B	1
6050	A	1
6099	A	2
7030	B	1
7031	B	1
7102	B	5
7103	B	3
9001	A	2
9002	A	1
9003	A	1
9004	A	1
9005	A	1
9006	A	1
9007	A	1
9008	A	1
9009	A	1
9010	B	5
9011	B	8
9013	B	2
9014	B	1
9015	B	1
9016	A	2
9017	A	1
9022	B	1
9023	B	1
9101	A	1
DC1	A	1
barcode	B	8


1
2
3
4
5
6
7
8
9
10
A
B
1101 DC1
7103
7102
7001
EJECT
REW
PLAY
WIND
STBY
STOP
REC
DOWN
UP
AUTOSTORE
PRESET
MDCP 3

OPERATING PANEL MDCP3, MDCB1



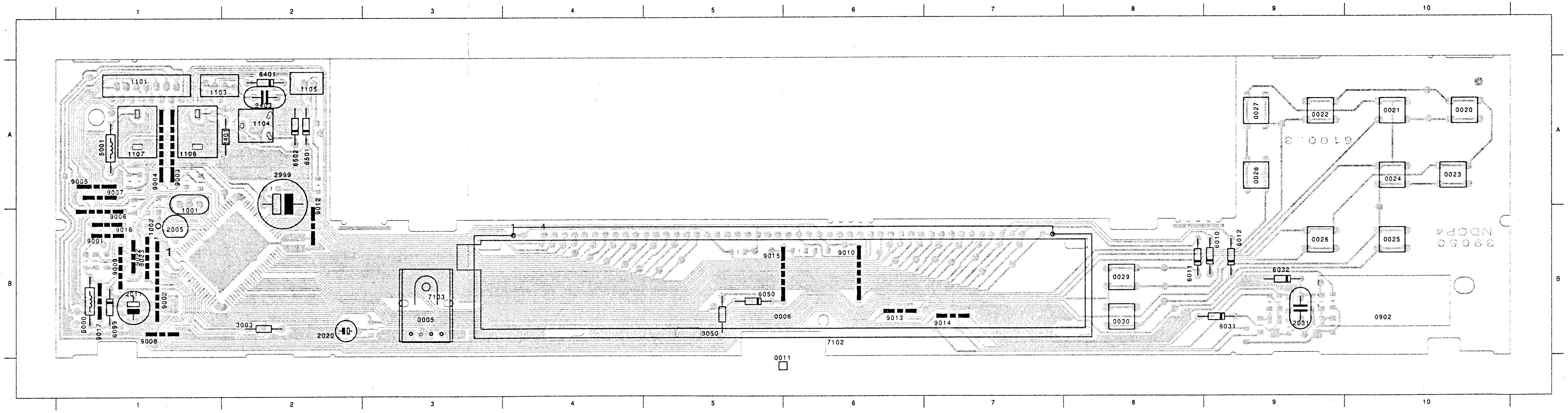
# ONLY FOR MDCB1 & MDCO1
* ONLY FOR MDCO1
7101
TMP87Cx70AF
IR-Receiver
7103
1001 8.00MHz
1002 32kHz
7030 BC558C
7031 BC548B
5000 22u
6099 BAT85
2011 220uF/16V
2999 0.22F/5V5
+5C
4.6V
5DDC
STOP
REC
UP
AUTOSTORE
DOWN
PRESET
# STORE
# SEARCH
PLAY
WIND
*RESET
EJECT
REW
STBY
# SETCLK
1N4148 6011
1N4148 6010
1N4148 6012
1101 DC1
POR
GNDD
DATD1
+5D
CLKD1
-28V
INT
HELO1
NC
HEHI
STROBE SB1**)
SDA
SCL
AFC
PWM PSS**)
3052 100E Option
6050 BZX79C9V1
9101
3053 15E
7102
VF-DISPLAY
CM1185G
DECODER PDC VPS TIMER TODAY LP START END
TIMER
TO F6 FAMILY
BOARD DECKELECTRONIC
**) Only for SECAM-sets
MDCP3,MDCB1
N.A. 9409.2

	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	13G	14G
P1	DECO.	PDC	VPS	P	TIMER		TODAY					LP	START	END
P2	a1												a1	a1
P3	b1	a	a	a	a	a	a	a	a	a	a	a	b1	b1
P4	f1	h	h	h	h	h	h	h	h	h	h	h	f1	f1
P5	g1	k	k	k	k	k	k	k	k	k	k	k	g1	g1
P6	c1	b	b	b	b	b	b	b	b	b	b	b	c1	c1
P7	e1	f	f	f	f	f	f	f	f	f	f	f	e1	e1
P8	d1	g	g	g	g	g	g	g	g	g	g	g	d1	d1
P9	a2	m	m	m	m	m	m	m	m	m	m	m	a2	a2
P10	b2	e	e	e	e	e	e	e	e	e	e	e	b2	b2
P11	f2	c	c	c	c	c	c	c	c	c	c	c	f2	f2
P12	g2	n	n	n	n	n	n	n	n	n	n	n	g2	g2
P13	c2	r	r	r	r	r	r	r	r	r	r	r	c2	c2
P14	e2	j1,j2	j1,j2	j1,j2	j1,j2	j1,j2	j1,j2	j1,j2	j1,j2	j1,j2	j1,j2	j1,j2	e2	e2
P15	d2	d	d	d	d	d	d	d	d	d	d	d	d2	d2
P16				TIMER					:					

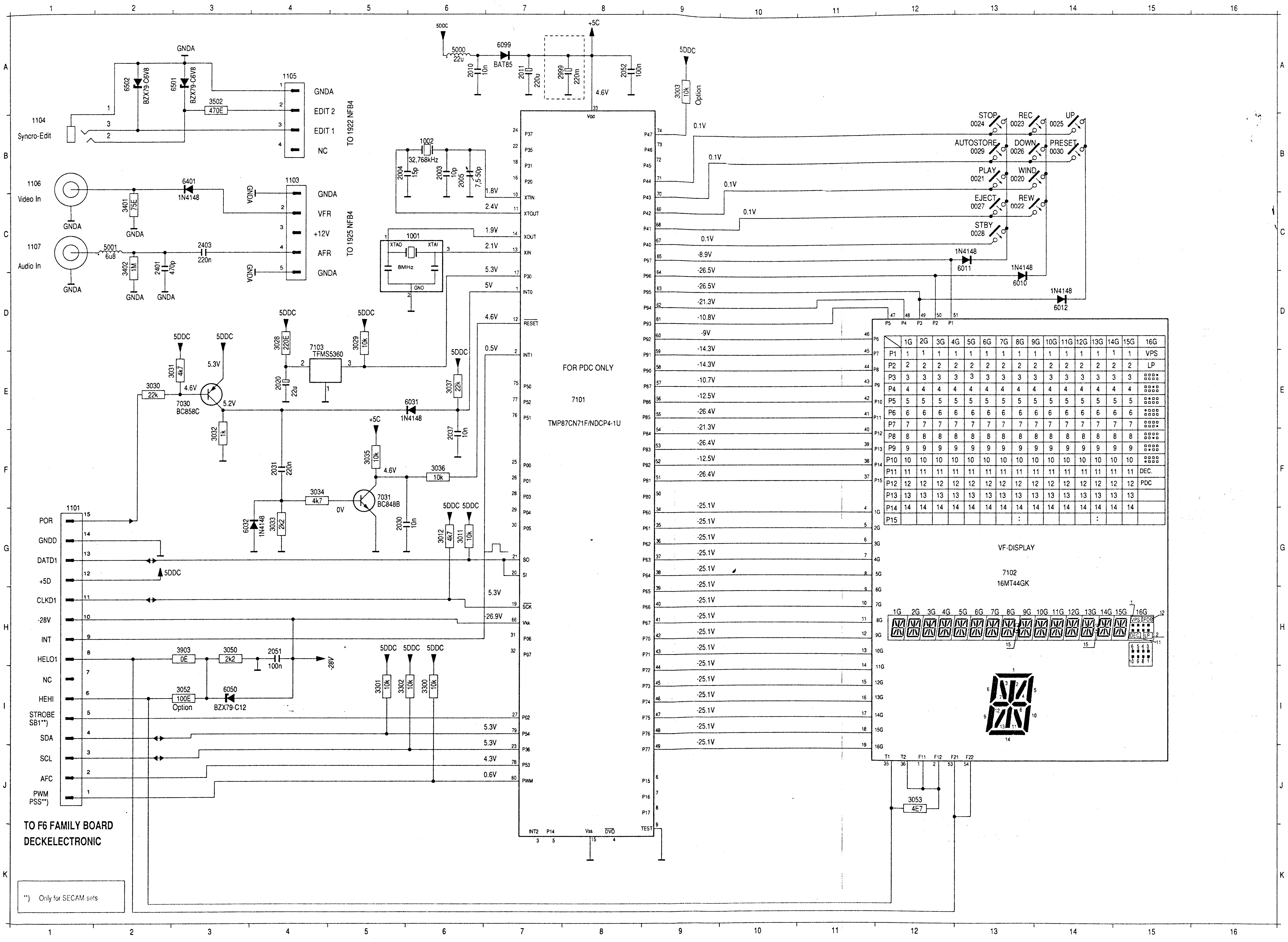
# SET	C13
*RESE	B14
1001	B 3
1002	B 5
2003	B 5
2004	B 5
2005	B 4
2010	A 6
2011	A 7
2020	C 1
2030	E 5
2031	E 3
2037	D 3
2051	H 4
2052	A 8
2999	A 7
3001	G 3
3002	H 3
3006	I 3
3007	J 3
3011	G 3
3012	G 4
3028	C 1
3029	C 2
3030	E 1
3031	E 1
3032	E 2
3033	E 3
3034	E 4
3035	D 4
3036	E 5
3037	D 2
3050	H 3
3052	I 3
3053	J12
3300	I 6
3301	I 5
3302	I 5
5000	A 6
6010	D13
6011	D13
6012	D14
6031	E 2
6032	E 3
6050	I 3
6099	A 6
7030	E 1
7031	E 4
7101	E 8
7102	G13
7103	C 2
9101	H 3
AUTOS	B13
DC1	G 1
DOWN	B13
EJECT	C13
PLAY	B13
PRESE	B14
REC	B13
REW	C13
STBY	C13
STOP	B13
UP	B14
WIND	B13

OPERATING PANEL NDCP4

0005	B	3
0006	0	5
0011	0	5
0902	B	9
1001	A	1
1002	B	1
1101	A	1
1103	A	1
1104	A	2
1105	A	2
1106	A	1
1107	A	1
2005	B	1
2011	B	1
2020	B	2
2031	B	9
2403	A	2
2999	A	2
3003	B	2
3050	B	5
3401	A	2
5000	B	1
5001	A	1
6010	B	9
6011	B	8
6012	B	9
6031	B	9
6032	B	9
6050	B	5
6099	B	1
6401	A	2
6501	A	2
6502	A	2
7102	B	6
7103	B	3
9001	B	1
9002	B	1
9003	A	1
9004	A	1
9005	A	1
9006	B	1
9007	A	1
9008	B	1
9009	B	1
9010	B	6
9012	B	2
9013	B	6
9014	B	7
9015	B	5
9016	B	1
9017	B	1
9022	B	1
9023	B	1


1
2
3
4
5
6
7
8
9
10
A
B
1101
1103
6401
1105
2403
1104
5001
1107
1106
6502
6501
9004
9003
2999
9005
9007
1001
9012
9006
9016
2005
1102
9001
9009
9002
9017
6099
6000
9008
3003
2020
7103
0005
3050
6050
0006
9015
9010
9013
9014
7102
0011
0027
0022
0021
0020
0028
0024
0023
0026
0025
6011
6010
6012
6032
0029
0030
6031
2031
0902
NDCP4

OPERATING PANEL NDCP4

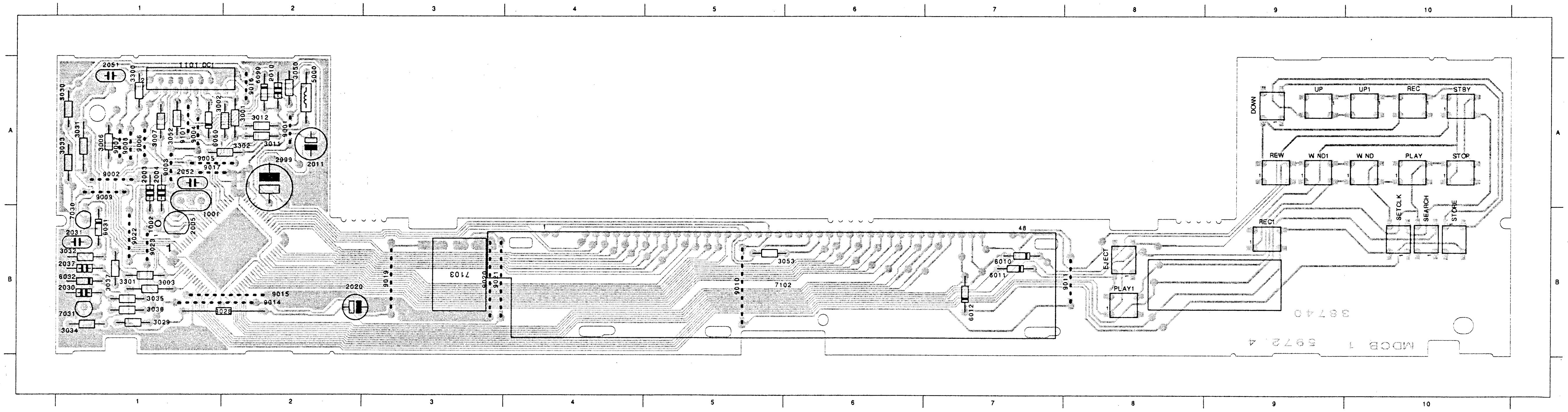

1104
Syncro-Edit
1105
GNDA
EDIT 2
EDIT 1
NC
TO 1922 NFB4
6502 BZX79-C6V8
6501 BZX79-C6V8
3502 470E
1106
Video In
1107
Audio In
3401 75E
3402 1M
5001 6u8
2401 470p
2403 220n
6401 1N4148
1103
GNDA
VFR
+12V
AFR
GNDA
TO 1925 NFB4
5DDC
5000 22u
6099 BAT85
2010 10n
2011 220u
2999 220m
2052 100n
+5C
4.6V
3003 10k Option
1002 32,768kHz
2004 15p
2003 10p
2005 7,5-50p
1001 XTAO XTAI 8MHz GND
3028 220E
3029 10k
7103 TFMS5360
2020 22u
3031 4k7
3030 22k
7030 BC858C
3032 1k
6031 1N4148
3037 22k
2037 10n
2031 220n
3035 10k
3036 10k
3034 4k7
7031 BC848B
6032 1N4148
3033 2k2
2030 10n
3012 4k7
3011 10k
1101
POR
GNDD
DATD1
+5D
CLKD1
-28V
INT
HELO1
NC
HEHI
STROBE SB1**)
SDA
SCL
AFC
PWM PSS**)
3903 0E
3050 2k2
2051 100n
-28V
3052 100E Option
6050 BZX79-C12
3301 10k
3302 10k
3300 10k
TO F6 FAMILY BOARD
DECKELECTRONIC
**) Only for SECAM sets
FOR PDC ONLY
7101
TMP87CN71F/NDCP4-1U
Vdd
P37 P35 P31 P20 XTIN XTOUT XOUT XIN P30 INT0 RESET INT1 P50 P52 P51 P00 P01 P03 P04 P05 SO SI SCK Vkk P06 P07 P02 P54 P36 P53 PWM
P47 P46 P45 P44 P43 P42 P41 P40 P97 P96 P95 P94 P93 P92 P91 P90 P87 P86 P85 P84 P83 P82 P81 P80 P60 P61 P62 P63 P64 P65 P66 P67 P70 P71 P72 P73 P74 P75 P76 P77 P15 P16 P17 TEST
INT2 P14 Vss DVO
1.8V 2.4V 1.9V 2.1V 5.3V 5V 4.6V 0.5V 5.3V 26.9V 5.3V 5.3V 4.3V 0.6V
0.1V -8.9V -26.5V -26.5V -21.3V -10.8V -9V -14.3V -14.3V -10.7V -12.5V -26.4V -21.3V -26.4V -12.5V -26.4V -25.1V
STOP 0024
REC 0023
UP 0025
AUTOSTORE 0029
DOWN 0026
PRESET 0030
PLAY 0021
WIND 0020
EJECT 0027
REW 0022
STBY 0028
1N4148 6011
1N4148 6010
1N4148 6012
VF-DISPLAY
7102
16MT44GK
1G 2G 3G 4G 5G 6G 7G 8G 9G 10G 11G 12G 13G 14G 15G 16G
VPS PDC
DEC LP
T1 T2 F11 F12 F21 F22
3053 4E7
A B C D E F G H I J K
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	13G	14G	15G	16G
P1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	VPS
P2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	LP
P3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	▦
P4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	▦
P5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	▦
P6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	▦
P7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	▦
P8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	▦
P9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	▦
P10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	▦
P11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	DEC.
P12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	PDC
P13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	
P14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	
P15								:					:			

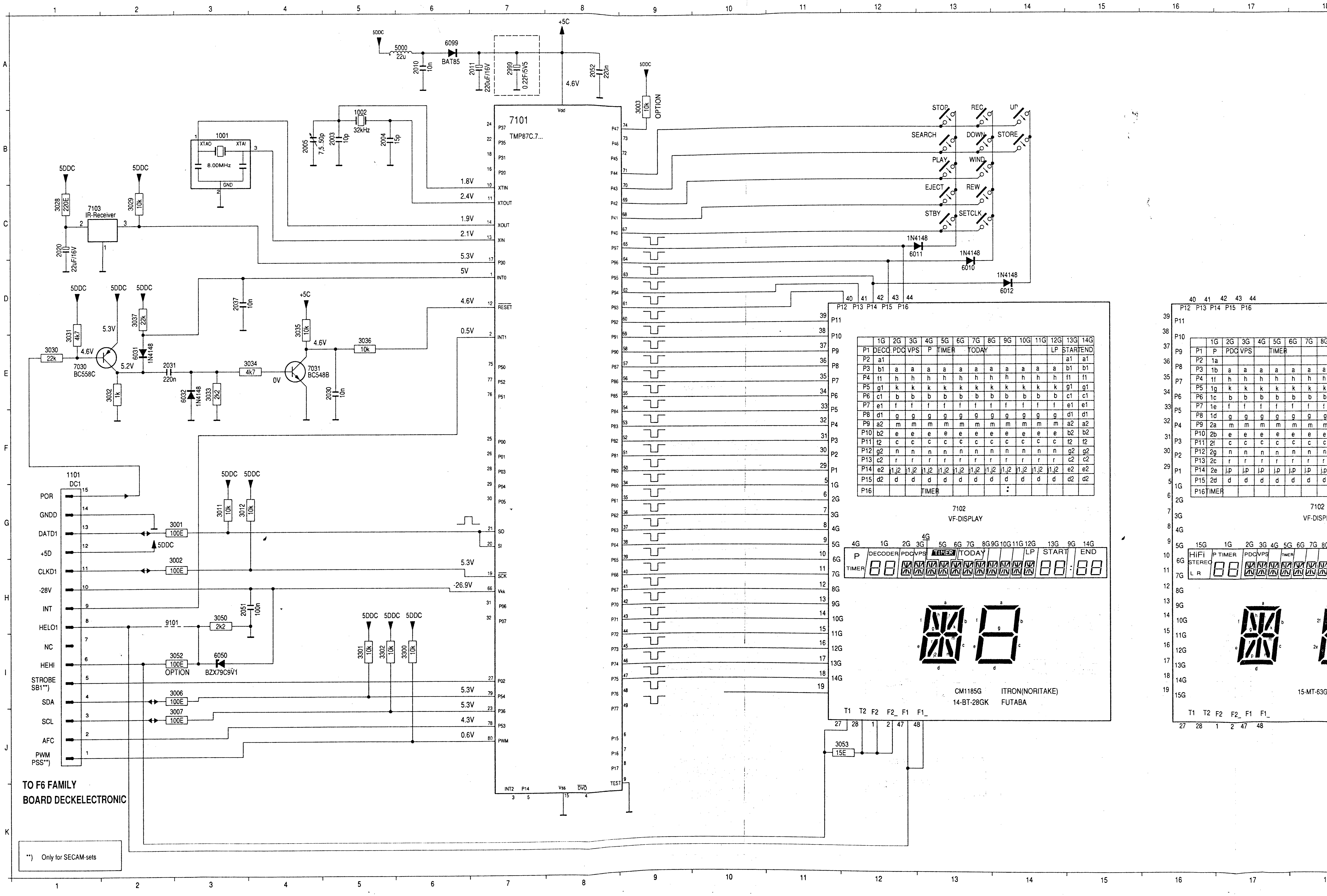
0020	B13
0021	B13
0022	C13
0023	B13
0024	B13
0025	B14
0026	B13
0027	C13
0028	C13
0029	B13
0030	B14
1001	C 6
1002	B 6
1101	G 1
1103	B 4
1104	B 1
1105	A 4
1106	B 1
1107	C 1
2003	B 6
2004	B 5
2005	B 6
2010	A 6
2011	A 7
2020	E 4
2030	G 5
2031	F 4
2037	F 6
2051	H 4
2052	A 8
2401	C 2
2403	C 3
2999	A 7
3003	A 9
3011	G 6
3012	G 6
3028	D 4
3029	D 5
3030	E 2
3031	E 3
3032	F 3
3033	G 4
3034	F 4
3035	F 5
3036	F 6
3037	E 6
3050	H 3
3052	I 3
3053	J12
3300	I 6
3301	I 5
3302	I 5
3401	C 2
3402	C 2
3502	A 3
3903	H 3
5000	A 6
5001	C 2
6010	D13
6011	D13
6012	D14
6031	E 6
6032	G 3
6050	I 3
6099	A 7
6401	B 3
6501	A 3
6502	A 2
7030	E 3
7031	F 5
7101	E 8
7102	G13
7103	E 4

OPERATING PANEL NDCB1

1001	A	1
1002	B	1
2003	A	1
2004	A	1
2005	B	1
2010	A	2
2011	A	2
2020	B	2
2030	B	1
2031	B	1
2037	B	1
2051	A	1
2052	A	1
2999	A	2
3001	A	2
3002	A	2
3003	B	1
3006	A	1
3007	A	1
3011	A	2
3012	A	2
3028	B	2
3029	B	1
3030	A	1
3031	A	1
3032	B	1
3033	A	1
3034	B	1
3035	B	1
3036	B	1
3037	B	1
3050	A	2
3052	A	1
3053	B	5
3300	A	1
3301	B	1
3302	A	2
5000	A	2
6010	B	7
6011	B	7
6012	B	7
6031	B	1
6032	B	1
6050	A	1
6099	A	2
7030	B	1
7031	B	1
7102	B	5
7103	B	3
9001	A	2
9002	A	1
9003	A	1
9004	A	1
9005	A	1
9006	A	1
9007	A	1
9008	A	1
9009	A	1
9010	B	5
9011	B	8
9014	B	1
9015	B	2
9016	A	2
9017	A	1
9019	B	3
9020	B	3
9021	B	3
9022	B	1
9023	B	1
9101	A	1
DC1	A	1
barcode	B	8

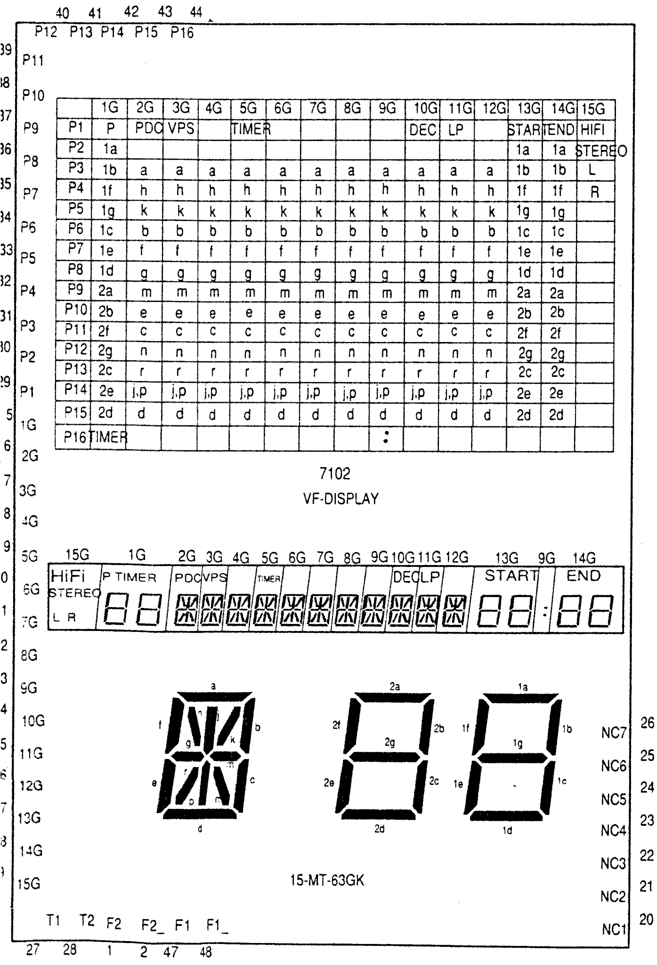

1
2
3
4
5
6
7
8
9
10
A
B
DOWN
UP
UP1
REC
STBY
REW
WIND1
WIND
PLAY
STOP
SETCLK
SEARCH
STORE
REC1
EJECT
PLAY1
7103
7102
48
3053
6010
6011
6012
9019
9010
9011
2020
9015
9014
3028
3029
3035
3036
3034
7031
3301
3003
3037
2030
6032
2037
3032
2031
7030
9009
9002
2051
3300
1101 DC1
6099
2010
3050
5000
3012
3011
3302
2999
2011
2052
2005
1001
1002
9022
9023
3030
3031
3033
3006
3007
3052
9101
6050
3002
3001
9005
9017
2003
2004
9003
9016
9001
9006
9007
9008
3 8 7 4 0
MDCB 1 5972 4

OPERATING PANEL NDCB1


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
A
B
C
D
E
F
G
H
I
J
K
5DDC
5000
22u
6099
BAT85
2010
10n
2011
220uF/16V
2999
0.22F/5V5
+5C
4.6V
2052
220n
3003
10k
OPTION
1002
32kHz
2005
7,5..50p
2003
10p
2004
15p
1001
XTAO
XTAI
8.00MHz
GND
3028
220E
3029
10k
7103
IR-Receiver
2020
22uF/16V
3031
4k7
3037
22k
6031
1N4148
3030
22k
7030
BC558C
5.3V
4.6V
5.2V
3032
1k
2031
220n
6032
1N4148
3033
2k2
3034
4k7
0V
7031
BC548B
3035
10k
3036
10k
2030
10n
2037
10n
1.8V
2.4V
1.9V
2.1V
5.3V
5V
0.5V
7101
TMP87C.7...
Vdd
P37
P35
P31
P20
XTIN
XTOUT
XOUT
XIN
P30
INT0
RESET
INT1
P50
P52
P51
P00
P01
P03
P04
P05
SO
SI
SCK
Vkk
P06
P07
P02
P54
P36
P53
PWM
INT2
P14
Vss
DVD
TEST
P47
P46
P45
P44
P43
P42
P41
P40
P97
P96
P95
P94
P93
P92
P91
P90
P87
P86
P85
P84
P83
P82
P81
P80
P60
P61
P62
P63
P64
P65
P66
P67
P70
P71
P72
P73
P74
P75
P76
P77
P15
P16
P17
1101
DC1
POR
GNDD
DATD1
+5D
CLKD1
-28V
INT
HELO1
NC
HEHI
STROBE
SB1**)
SDA
SCL
AFC
PWM
PSS**)
3001
100E
3002
100E
3011
10k
3012
10k
2051
100n
-26.9V
9101
3050
2k2
3052
100E
OPTION
6050
BZX79C9V1
3301
10k
3302
10k
3300
10k
3006
100E
3007
100E
5.3V
5.3V
4.3V
0.6V
TO F6 FAMILY
BOARD DECKELECTRONIC
**) Only for SECAM-sets
STOP
REC
UP
SEARCH
DOWN
STORE
PLAY
WIND
EJECT
REW
STBY
SETCLK
1N4148
6011
1N4148
6010
1N4148
6012
7102
VF-DISPLAY
P
TIMER
DECODER
PDC
VPS
TIMER
TODAY
LP
START
END
CM1185G
14-BT-28GK
ITRON(NORITAKE)
FUTABA
T1
T2
F2
F2_
F1
F1_
3053
15E
HiFi
STEREO
L R
15-MT-63G

	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	13G	14G
P1	DECO	PDC	VPS	P	TIMER		TODAY					LP	START	END
P2	a1												a1	a1
P3	b1	a	a	a	a	a	a	a	a	a	a	a	b1	b1
P4	f1	h	h	h	h	h	h	h	h	h	h	h	f1	f1
P5	g1	k	k	k	k	k	k	k	k	k	k	k	g1	g1
P6	c1	b	b	b	b	b	b	b	b	b	b	b	c1	c1
P7	e1	f	f	f	f	f	f	f	f	f	f	f	e1	e1
P8	d1	g	g	g	g	g	g	g	g	g	g	g	d1	d1
P9	a2	m	m	m	m	m	m	m	m	m	m	m	a2	a2
P10	b2	e	e	e	e	e	e	e	e	e	e	e	b2	b2
P11	f2	c	c	c	c	c	c	c	c	c	c	c	f2	f2
P12	g2	n	n	n	n	n	n	n	n	n	n	n	g2	g2
P13	c2	r	r	r	r	r	r	r	r	r	r	r	c2	c2
P14	e2	j1,j2	j1,j2	j1,j2	j1,j2	j1,j2	j1,j2	j1,j2	j1,j2	j1,j2	j1,j2	j1,j2	e2	e2
P15	d2	d	d	d	d	d	d	d	d	d	d	d	d2	d2
P16				TIMER					:					

	1G	2G	3G	4G	5G	6G	7G	8G
P1	P	PDC	VPS		TIMER			
P2	1a							
P3	1b	a	a	a	a	a	a	a
P4	1f	h	h	h	h	h	h	h
P5	1g	k	k	k	k	k	k	k
P6	1c	b	b	b	b	b	b	b
P7	1e	f	f	f	f	f	f	f
P8	1d	g	g	g	g	g	g	g
P9	2a	m	m	m	m	m	m	m
P10	2b	e	e	e	e	e	e	e
P11	2f	c	c	c	c	c	c	c
P12	2g	n	n	n	n	n	n	n
P13	2c	r	r	r	r	r	r	r
P14	2e	j,p	j,p	j,p	j,p	j,p	j,p	j,p
P15	2d	d	d	d	d	d	d	d
P16	TIMER							


40
41
42
43
44
P12 P13 P14 P15 P16
P11
P10
P9
P8
P7
P6
P5
P4
P3
P2
P1
1G
2G
3G
4G
5G
6G
7G
8G
9G
10G
11G
12G
13G
14G
15G
15G 1G 2G 3G 4G 5G 6G 7G 8G 9G 10G 11G 12G 13G 9G 14G
HiFi
STEREO
L R
P TIMER
PDC
VPS
TIMER
DEC
LP
START
END
a
b
c
d
e
f
g
h
k
m
n
r
2a
2b
2c
2d
2e
2f
2g
1a
1b
1c
1d
1e
1f
1g
15-MT-63GK
NC7 26
NC6 25
NC5 24
NC4 23
NC3 22
NC2 21
NC1 20
T1 T2 F2 F2_ F1 F1_
27 28 1 2 47 48

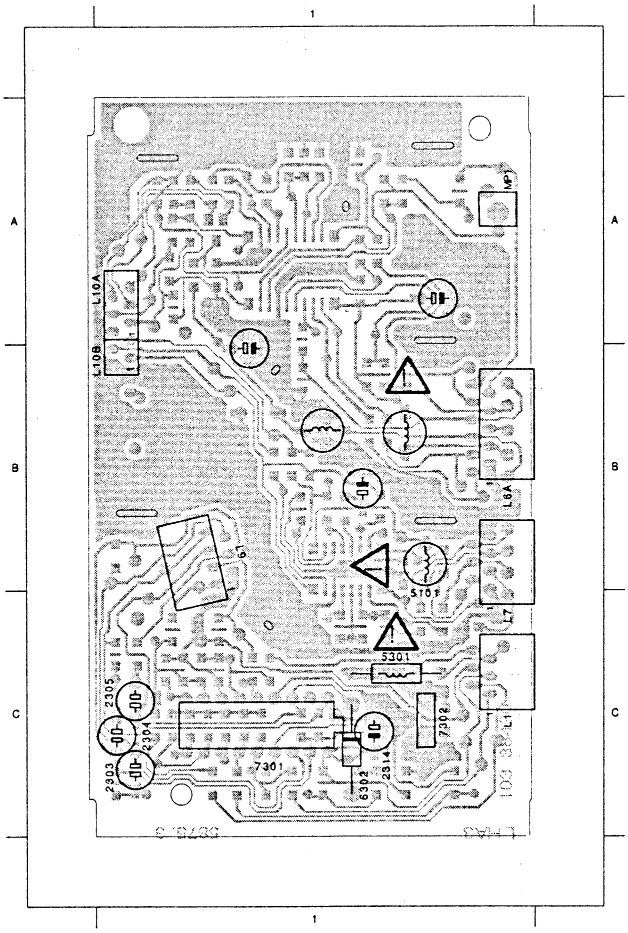
	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	13G	14G	15G
P1	P	PDC	VPS		TIMER					DEC	LP		START	END	HIFI
P2	1a												1a	1a	STEREO
P3	1b	a	a	a	a	a	a	a	a	a	a	a	1b	1b	L
P4	1f	h	h	h	h	h	h	h	h	h	h	h	1f	1f	R
P5	1g	k	k	k	k	k	k	k	k	k	k	k	1g	1g	
P6	1c	b	b	b	b	b	b	b	b	b	b	b	1c	1c	
P7	1e	f	f	f	f	f	f	f	f	f	f	f	1e	1e	
P8	1d	g	g	g	g	g	g	g	g	g	g	g	1d	1d	
P9	2a	m	m	m	m	m	m	m	m	m	m	m	2a	2a	
P10	2b	e	e	e	e	e	e	e	e	e	e	e	2b	2b	
P11	2f	c	c	c	c	c	c	c	c	c	c	c	2f	2f	
P12	2g	n	n	n	n	n	n	n	n	n	n	n	2g	2g	
P13	2c	r	r	r	r	r	r	r	r	r	r	r	2c	2c	
P14	2e	j,p	j,p	j,p	j,p	j,p	j,p	j,p	j,p	j,p	j,p	j,p	2e	2e	
P15	2d	d	d	d	d	d	d	d	d	d	d	d	2d	2d	
P16	TIMER								:						

7102
VF-DISPLAY

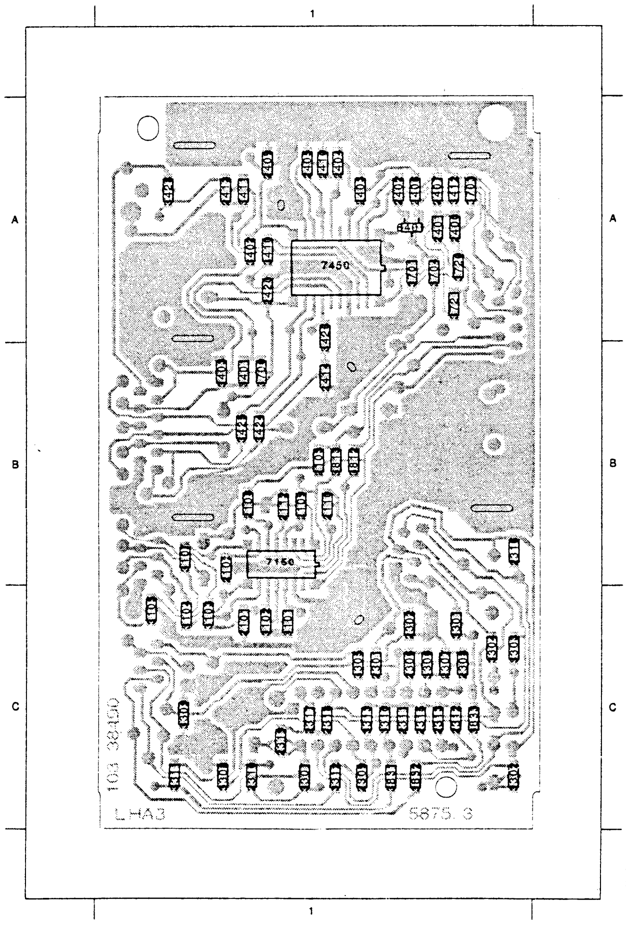
NDCB1
N.A. 9409.2

1001	B 3
1002	B 5
2003	B 5
2004	B 5
2005	B 4
2010	A 6
2011	A 7
2020	C 1
2030	E 5
2031	E 2
2037	D 3
2051	H 3
2052	A 8
2999	A 7
3001	G 3
3002	H 3
3003	A 9
3006	I 3
3007	J 3
3011	G 3
3012	G 3
3028	C 1
3029	C 2
3030	E 1
3031	E 1
3032	E 2
3033	E 3
3034	E 4
3035	D 4
3036	E 5
3037	D 2
3050	H 3
3052	I 3
3053	J12
3300	I 6
3301	I 5
3302	I 5
5000	A 6
6010	D13
6011	D13
6012	D14
6031	E 2
6032	E 3
6050	I 3
6099	A 6
7030	E 1
7031	E 4
7101	B 7
7102	G13
7103	C 1
9101	H 2
DC1	G 1
DOWN	B13
EJECT	C13
PLAY	B13
REC	B13
REW	C13
SEARC	B13
SETCL	C13
STBY	C13
STOP	B13
STORE	B14
UP	B14
WIND	B13

HEAD AMPLIFIER LHA4/0

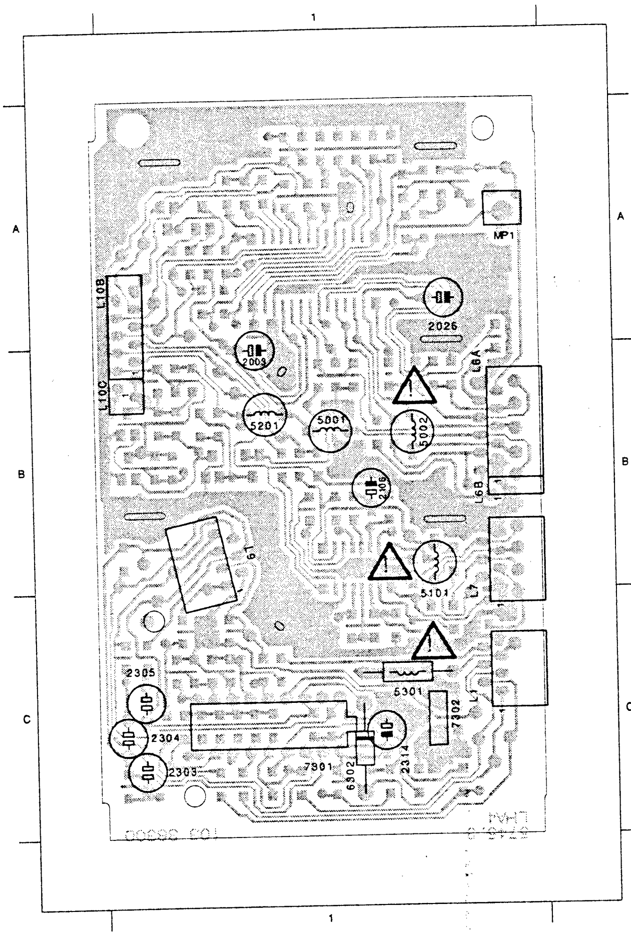

1
A
B
C
L10A
L10B
MP1
L6A
L9
L7
L1
5101
5301
2305
2304
2303
7301
6302
2314
7302
103 38450
LHA3
5875 3

2106	B	1
2303	C	1
2304	C	1
2305	C	1
2314	C	1
2408	A	1
2411	B	1
5101	B	1
5301	C	1
5401	B	1
5402	B	1
6302	C	1
7301	C	1
7302	C	1
L1	C	1
L6A	B	1
L7	B	1
L9	B	1
L10A	A	1
L10B	B	1
MP1	A	1

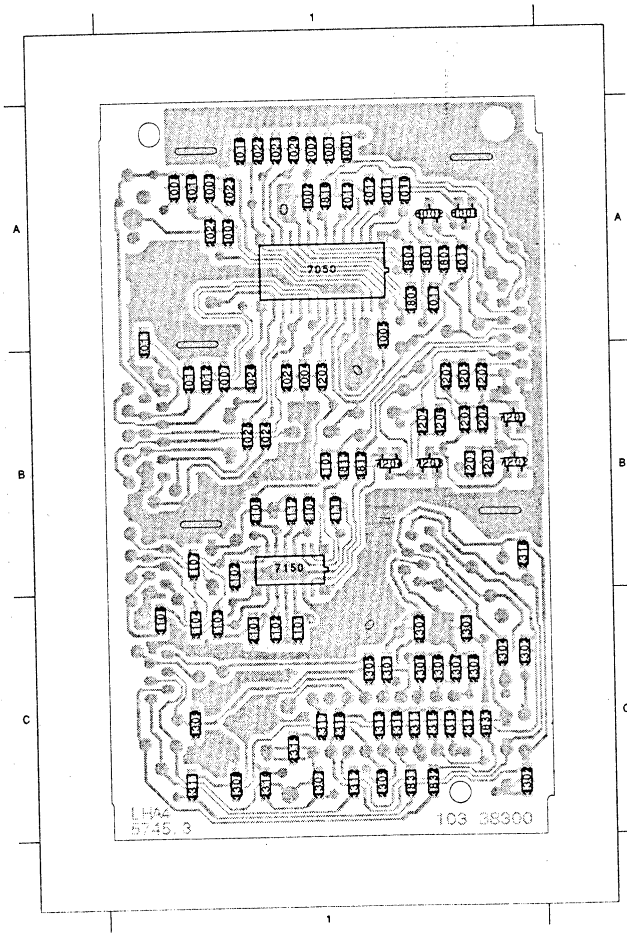

1
A
B
C
7450
7150
103 38450
LHA3
5875 3

2101	C	1
2102	B	1
2103	B	1
2108	B	1
2109	B	1
2110	B	1
2112	B	1
2301	C	1
2302	C	1
2306	C	1
2307	C	1
2308	C	1
2309	C	1
2310	C	1
2311	C	1
2312	C	1
2313	C	1
2315	C	1
2316	B	1
2317	C	1
2318	C	1
2319	C	1
2400	A	1
2401	A	1
2402	A	1
2403	A	1
2404	A	1
2405	A	1
2406	A	1
2407	A	1
2409	A	1
2410	A	1
2413	A	1
2414	B	1
2420	A	1
3101	C	1
3102	C	1
3103	C	1
3104	C	1
3105	C	1
3107	B	1
3301	C	1
3302	C	1
3303	C	1
3304	C	1
3305	C	1
3306	C	1
3307	C	1
3308	C	1
3309	C	1
3310	C	1
3311	C	1
3312	C	1
3313	C	1
3401	B	1
3402	A	1
3403	B	1
3410	A	1
3411	A	1
3412	A	1
3424	B	1
3425	B	1
3426	A	1
3428	A	1
3700	B	1
3701	A	1
3703	A	1
3704	A	1
3720	A	1
3721	A	1
3812	B	1
3813	B	1
3831	C	1
3832	C	1
3833	C	1
6401	A	1
7150	B	1
7450	A	1

HEAD AMPLIFIER LHA2/0, 3/0


1
A
B
C
L10B
L10C
2003
2026
5201
5001
5002
2106
L6A
L6B
L9
L7
5101
MP1
5301
2305
2304
2303
7301
6302
2314
7302
L1

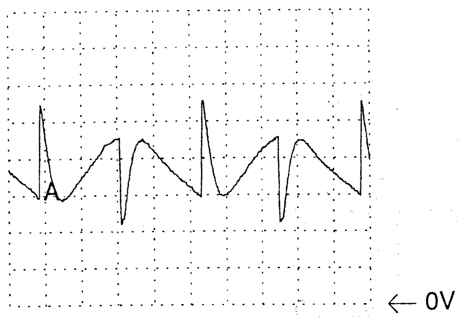
2003	B	1
2026	A	1
2106	B	1
2303	C	1
2304	C	1
2305	C	1
2314	C	1
5001	B	1
5002	B	1
5101	B	1
5201	B	1
5301	C	1
6302	C	1
7301	C	1
7302	C	1
L1	C	1
L6A	B	1
L6B	B	1
L7	B	1
L9	B	1
L10B	B	1
L10C	B	1
MP1	A	1


1
A
B
C
7050
7150
LHA4
5745.3
103 38300

2001	A	1
2002	A	1
2004	B	1
2007	B	1
2010	A	1
2011	A	1
2012	A	1
2013	A	1
2015	A	1
2017	A	1
2018	A	1
2020	A	1
2021	A	1
2022	A	1
2023	A	1
2024	A	1
2025	B	1
2101	C	1
2102	B	1
2103	B	1
2108	B	1
2109	B	1
2110	B	1
2112	B	1
2201	B	1
2202	B	1
2203	B	1
2204	B	1
2301	C	1
2302	C	1
2306	C	1
2307	C	1
2308	C	1
2309	C	1
2310	C	1
2311	C	1
2312	C	1
2313	C	1
2315	C	1
2316	B	1
2317	C	1
2318	C	1
2319	C	1
3001	A	1
3002	A	1
3003	A	1
3004	A	1
3005	A	1
3008	A	1
3010	A	1
3011	A	1
3012	B	1
3015	B	1
3024	B	1
3025	B	1
3026	B	1
3101	C	1
3102	C	1
3103	C	1
3104	C	1
3105	C	1
3107	B	1
3201	B	1
3202	B	1
3203	B	1
3204	B	1
3205	B	1
3206	B	1
3301	C	1
3302	C	1
3303	C	1
3304	C	1
3305	C	1
3306	C	1
3307	C	1
3308	C	1
3309	C	1
3310	C	1
3311	C	1
3312	C	1
3313	C	1
3801	A	1
3803	A	1
3804	A	1
3805	A	1
3810	A	1
3812	B	1
3813	B	1
3831	C	1
3832	C	1
3833	C	1
6001	A	1
6002	A	1
7050	A	1
7150	B	1
7201	B	1
7202	B	1
7203	B	1
7204	B	1

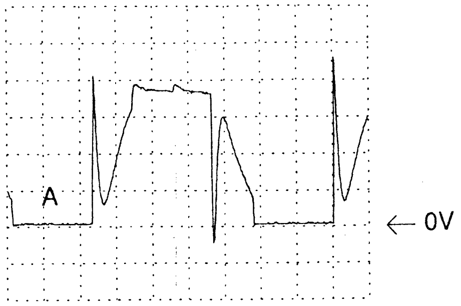
HEAD AMPLIFIER LHA2/0, 3/0 (for Standard play)

A: DC, 1 V/Div, 0.5 ms/Div



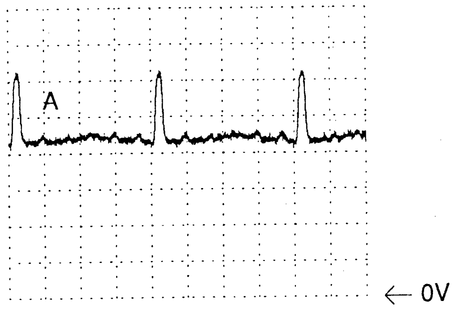
Osc. 55
Connector L9,4

A: DC, 2 V/Div, 1 ms/Div



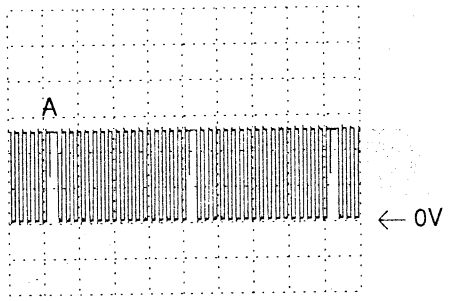
Osc. 56
IC 7301 Pin 1,16,3

A: DC, 0.2 V/Div, 10 ms/Div

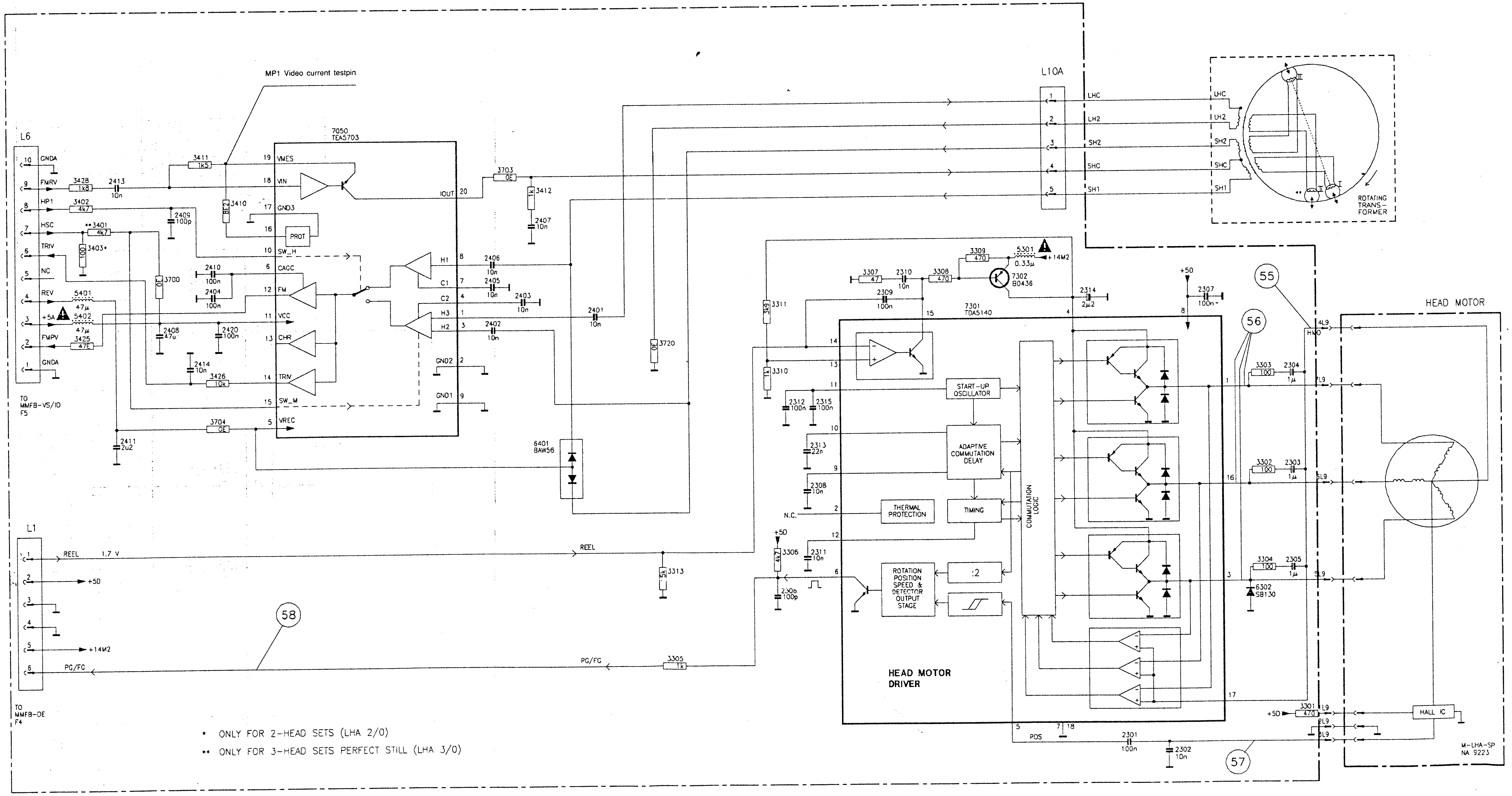


Osc. 57
Connector L9,3

A: DC, 2 V/Div, 10 ms/Div



Osc. 58
Connector L1,6 PG/FG


MP1 Video current testpin
L6
10 GNDA
9 FMRV
8 HP1
7 HSC
6 TRIV
5 NC
4 REV
3 +5A
2 FMPV
1 GNDA
TO MMFB-VS/IO F5
3428 1k8
2413 10n
3402 4k7
**3401 4k7
3403* 100
5401 47µ
5402 47µ
3425 47E
3411 1k5
3410 8E2
2409 100p
3700 0E
2410 100n
2404 100n
2408 47u
2420 100n
2414 10n
3426 10k
3704 0E
2411 2u2
7050 TEA5703
19 VMES
18 VIN
17 GND3
16 PROT
10 SW_H
6 CACC
12 FM
11 VCC
13 CHR
14 TRIV
15 SW_M
5 VREC
IOUT 20
H1 8
C1 7
C2 4
H3 1
H2 3
GND2 2
GND1 9
3703 0E
3412 1k
2407 10n
2406 10n
2405 10n
2403 10n
2401 10n
2402 10n
6401 BAW56
3720 0E
L10A
LHC
LH2
SH2
SHC
SH1
ROTATING TRANS-FORMER
L1
1 REEL 1.7 V
2 +5D
3
4
5 +14M2
6 PG/FC
REEL
PG/FC
3305 1k
3313 5k6
TO MMFB-DE F4
58
3311 3k9
3310 1k
3307 47
2310 10n
3308 470
3309 470
5301 0.33µ +14M2
7302 BD436
2309 100n
7301 TDA5140
2314 2µ2
+5D
2307 100n
2312 100n
2315 100n
2313 22n
2308 10n
N.C.
+5D
3306 4k7
2311 10n
2306 100p
START-UP OSCILLATOR
ADAPTIVE COMMUTATION DELAY
THERMAL PROTECTION
TIMING
COMMUTATION LOGIC
ROTATION POSITION SPEED & DETECTOR OUTPUT STAGE
:2
HEAD MOTOR DRIVER
POS
2301 100n
2302 10n
55
56
57
3303 100
2304 1µ
3302 100
2303 1µ
3304 100
2305 1µ
6302 SB130
3301 470
HMO
4L9
7L9
5L9
6L9
1L9
2L9
3L9
HEAD MOTOR
HALL IC
M-LHA-SP NA 9223

* ONLY FOR 2-HEAD SETS (LHA 2/0)

** ONLY FOR 3-HEAD SETS PERFECT STILL (LHA 3/0)

FAMILY BOARD N1 N2

"INSERTED COMPONENTS ARE DEPENDENT ON THE SET TYPE"

2000	C	3
2001	B	4
2002	B	3
2003	B	3
2004	B	4
2005	B	4
2010	B	4
2013	A	4
2014	A	4
2015	A	4
2017	A	5
2018	A	4
2019	A	4
2020	A	4
2025	A	3
2026	B	4
2027	C	3
2028	A	2
2029	A	2
2033	C	4
2034	A	3
2038	A	5
2039	A	4
2042	A	3
2043	A	3
2048	A	3
2050	A	3
2055	A	3
2056	A	3
2057	A	3
2061	B	3
2063	B	3
2064	B	4
2065	B	5
2066	B	5
2067	B	5
2068	B	4
2069	B	4
2070	B	5
2071	B	4
2072	B	4
2079	C	3
2080	C	3
2086	B	3
2087	B	5
2088	A	4
2090	B	2
2095	A	5
2096	A	5
2097	A	4
2098	B	5
2099	B	3
2100	C	2
2101	C	3
2106	C	3
2107	A	5
2211	B	5
2300	A	2
2301	A	2
2302	A	2
2303	A	2
2304	A	2
2305	A	2
2400	B	7
2403	B	8
2404	B	8
2405	B	8
2406	B	8
2407	C	8
2408	C	8
2409	C	8
2411	B	6
2413	B	6
2414	C	7
2415	C	6
2416	C	7
2418	B	8
2419	B	8
2421	C	6
2422	B	6
2423	B	8
2500	C	2
2503	C	3
2504	C	3
2505	C	1
2506	C	3
2508	C	1
2600	A	7
2601	A	7
2602	A	7
2603	A	7
2604	A	6
2606	A	6
2607	A	7
2608	A	6
2610	A	6
2612	A	7
2613	A	6
2618	A	8
2621	A	8
2623	C	4
2630	A	7
2700	A	1
2701	B	1
2702	B	1
2703	B	2
2704	A	2
2705	A	1
2707	B	2
2720	B	1
2721	B	1
2722	C	1
2726	C	1
2727	C	1
2728	B	1
2733	A	1
2760	B	1
3001	B	4
3008	B	3
3011	A	3
3017	A	5
3019	A	5
3021	A	4
3022	A	4
3023	A	4
3025	A	3
3026	A	5
3027	B	4
3028	A	5
3029	A	4
3030	B	4
3031	A	3
3033	A	5
3034	A	4
3036	A	4
3037	A	4
3038	A	5
3040	A	4
3041	C	2
3043	A	2
3044	A	2
3045	A	3
3046	A	3
3051	A	3
3052	A	3
3055	B	3
3062	B	3
3063	B	3
3064	B	3
3065	B	4
3066	B	5
3067	B	5
3068	B	5
3069	B	5
3070	B	5
3071	B	4
3072	B	4
3073	B	4
3075	B	4
3077	B	4
3078	B	4
3085	B	3
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3088	B	3
3090	C	3
3091	C	3
3092	C	3
3093	C	3
3094	C	3
3097	C	3
3104	C	3
3105	C	3
3106	C	3
3109	B	5
3111	B	4
3112	B	4
3114	A	4
3116	B	4
3117	B	3
3119	B	2
3121	B	3
3128	A	3
3132	C	3
3135	A	3
3136	A	3
3137	B	3
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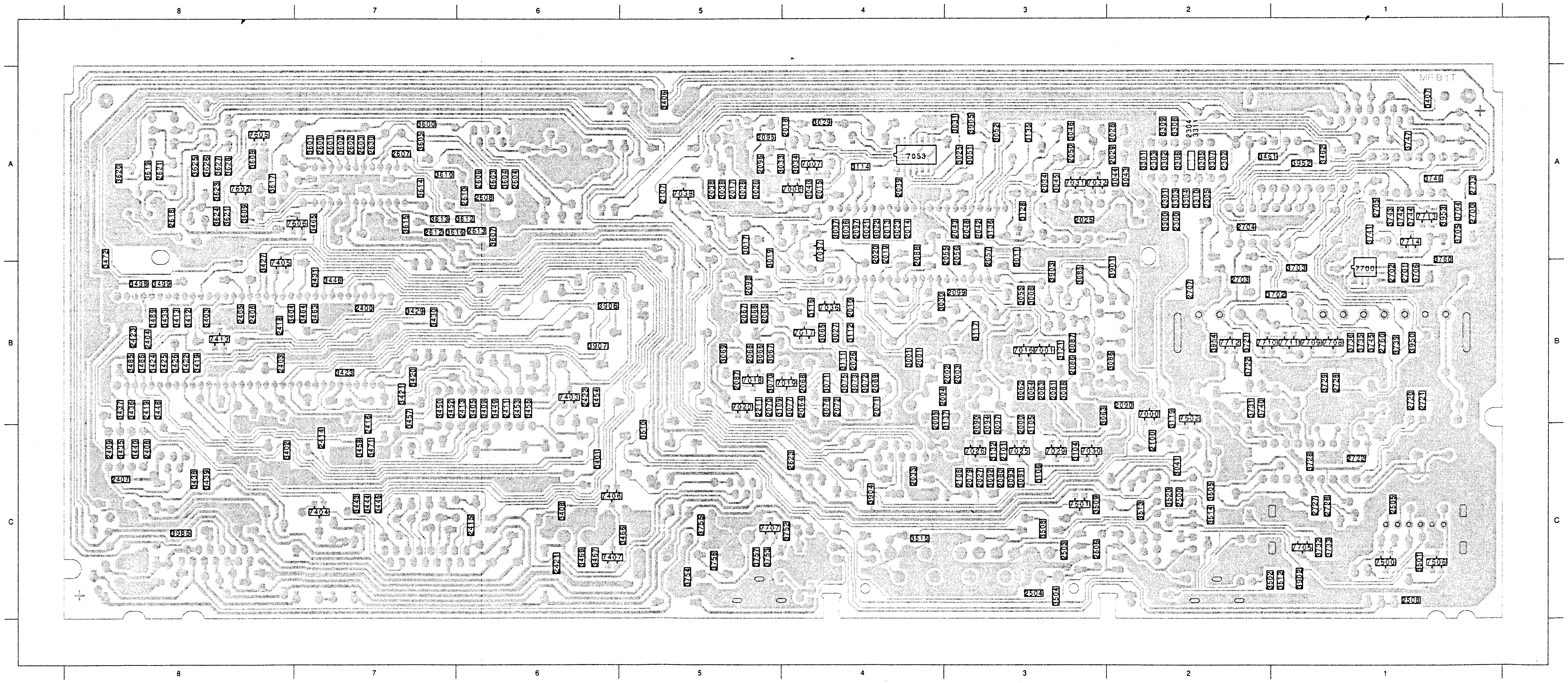
3301	A	2
3302	A	2
3303	A	2
3304	A	2
3305	A	2
3306	A	2
3307	A	2
3308	A	2
3309	A	2
3310	A	2
3311	A	2
3401	C	6
3402	C	8
3403	B	8
3404	B	8
3405	B	6
3406	A	5
3407	A	1
3408	C	6
3409	B	6
3412	B	8
3413	B	8
3419	B	8
3420	B	7
3421	B	7
3422	B	8
3423	B	7
3424	B	8
3425	B	8
3426	B	8
3427	B	8
3429	B	7
3430	B	7
3431	B	7
3433	B	8
3435	C	8
3436	B	8
3437	B	8
3438	C	8
3439	C	8
3440	C	8
3443	C	7
3444	C	7
3445	C	7
3446	B	7
3448	B	8
3449	B	6
3450	B	7
3452	B	7
3453	B	6
3454	B	6
3455	B	6
3457	B	7
3458	C	7
3461	A	2
3462	A	1
3463	B	7
3464	B	7
3465	A	7
3466	C	5
3467	C	6
3469	C	6
3471	C	7
3472	A	8
3485	B	8
3486	B	8
3489	B	8
3498	B	8
3499	B	8
3501	C	1
3502	C	2
3504	C	3
3505	C	2
3508	C	3
3509	C	3
3510	C	5
3512	C	1
3513	C	2
3514	C	2
3515	C	4
3520	C	2
3600	A	7
3601	A	7
3602	A	7
3603	A	6
3604	A	6
3605	A	7
3607	A	6
3608	A	8
3609	A	8
3610	A	7
3612	A	6
3613	A	7
3614	A	7
3615	A	7
3616	A	7
3617	A	8
3619	A	8
3620	A	8
3621	A	8
3623	A	8
3624	A	8
3625	A	8
3626	A	8
3627	A	8
3628	A	8
3702	B	1
3703	B	1
3704	A	1
3705	A	1
3706	B	1
3721	B	2
3722	B	2
3728	C	1
3729	B	1
3731	B	2
3732	C	1
3733	C	1
3735	B	1
3736	B	1
3739	B	1
3740	B	2
3741	A	1
3742	A	1
3743	A	1
3744	A	1
3745	B	1
3746	A	1
3747	A	1
3752	C	4
3753	C	5
3754	C	5
3755	C	5
3756	C	5
3757	C	5
3760	A	1
3901	B	2
3902	C	1
3903	B	3
3904	C	4
3905	A	3
3906	B	6
3907	B	6
3950	B	1
3952	A	1
3953	A	1
3954	B	2
3985	C	8
7000	B	2
7001	B	3
7006	A	4
7007	A	4
7016	B	3
7017	B	4
7018	B	5
7019	B	4
7020	B	5
7025	C	3
7026	C	3
7029	C	3
7030	C	3
7031	A	3
7032	A	3
7036	B	4
7037	A	4
7038	A	5
7053	A	4
7403	B	6
7404	C	7
7405	B	8
7406	C	6
7407	C	6
7413	B	8
7500	C	1
7501	C	3
7502	B	2
7506	C	1
7602	A	8
7605	A	8
7606	A	7
7700	B	1
7705	C	1
7707	C	5
7708	B	1
7709	B	1
7710	B	2
7711	B	1
7712	B	2
7713	A	1
7714	A	1



3-27

FAMILY BOARD N1 N2

"INSERTED COMPONENTS ARE DEPENDENT ON THE SET TYPE"

0101	C	4
0141	C	8
0142	A	1
0143	C	7
0144	C	5
0145	C	8
0146	C	7
0151	C	3
0161	A	6
0162	A	6
1400	C	8
1401	B	8
1402	A	5
1500	C	1
1501	C	2
1601	A	3
1602	C	5
1603	B	3
1701	A	1
1720	B	2
1721	B	1
1722	B	1
1723	B	2
1724	B	2
2009	B	2
2011	B	4
2012	A	4
2021	B	3
2023	C	5
2024	B	4
2032	A	3
2035	A	2
2040	A	4
2041	A	3
2045	A	3
2046	A	3
2047	A	3
2052	B	4
2058	B	3
2059	B	3
2082	B	2
2083	B	2
2084	B	2
2085	B	3
2402	B	7
2410	C	6
2412	B	6
2417	B	8
2420	C	6
2507	C	2
2605	A	7
2609	A	6
2611	A	7
2614	A	8
2615	A	7
2616	A	8
2617	A	8
2619	A	8
2620	A	8
2622	A	6
2723	B	1
2724	B	2
2725	B	1
2729	C	2
2730	A	1
2732	C	5
2750	C	5
3010	B	3
3018	A	5
3020	B	4
3039	A	5
3054	A	5
3076	C	4
3089	C	4
3096	B	3
3099	B	4
3100	B	3
3400	B	6
3410	C	7
3411	C	7
3415	A	5
3416	B	7
3417	B	7
3418	B	5
3428	C	6
3432	B	5
3434	C	8
3441	C	6
3442	C	8
3447	C	6
3451	C	7
3456	C	7
3459	B	8
3460	B	7
3468	C	5
3470	C	5
3473	C	6
3488	C	8
3500	C	1
3506	C	2
3507	C	2
3511	C	2
3516	C	1
3517	C	5
3521	C	1
3606	A	6
3611	A	6
3618	A	8
3700	A	1
3701	A	1
3707	A	1
3708	A	1
3720	B	2
3723	C	1
3724	C	1
3725	C	1
3730	B	2
3750	C	4
3751	C	4
3761	A	1
5002	B	4
5003	B	3
5004	B	3
5005	C	2
5006	B	3
5008	B	4
5009	B	4
5010	B	4
5011	B	5
5012	B	5
5013	B	5
5014	A	3
5015	A	3
5016	A	2
5017	A	5
5021	A	2
5022	C	4
5023	C	3
5024	C	3
5025	A	5
5401	C	8
5402	C	8
5441	A	6
5442	A	6
5501	C	1
5601	A	7
5602	A	6
5603	A	8
5604	A	8
5701	C	2
5703	B	1
5720	B	1
5721	C	1
5722	B	1
6001	A	3
6002	A	4
6004	A	4
6401	B	7
6402	C	6
6501	C	4
6502	C	3
6504	C	3
6506	C	3
6507	C	3
6508	C	2
6509	C	3
6510	C	3
6702	C	5
7051	A	4
7301	A	2
7402	C	8
7408	C	6
7410	B	8
7411	C	6
7412	A	2
7504	A	3
7505	B	3
7551	C	2
7601	A	7
7603	A	8
7604	A	8
7607	A	8
7701	A	2
7702	C	1
7703	C	5
7704	A	1
7706	C	5
9001	A	2
9003	B	2
9004	C	3
9005	B	2
9006	C	1
9007	A	1
9008	B	2
9009	B	1
9010	A	1
9012	A	1
9013	A	2
9014	A	1
9015	B	1
9016	A	1
9018	B	8
9019	C	1
9020	C	2
9022	B	1
9023	C	2
9024	A	2
9025	C	4
9026	B	2
9027	B	2
9028	C	2
9029	C	4
9030	C	4
9031	C	4
9032	C	4
9033	C	4
9034	C	4
9035	C	5
9036	C	5
9037	B	4
9038	C	2
9039	B	4
9040	A	3
9041	A	3
9042	A	4
9043	A	4
9044	A	4
9045	A	4
9046	A	4
9047	A	4
9048	B	4
9049	B	4
9050	B	4
9051	B	3
9052	B	3
9053	A	4
9054	B	3
9055	C	4
9056	C	4
9057	A	3
9058	B	3
9059	B	3
9060	B	3
9061	B	3
9062	C	3
9063	B	3
9064	B	7
9065	A	5
9066	A	5
9067	A	5
9068	B	5
9069	B	5
9070	B	5
9071	A	4
9072	B	5
9074	B	5
9076	B	5
9078	B	5
9079	B	2
9080	C	2
9090	A	6
9091	A	6
9100	C	7
9101	C	8
9102	C	8
9103	C	6
9104	C	8
9105	C	8
9106	C	7
9107	C	8
9108	C	8
9109	C	8
9110	C	8
9111	C	8
9112	B	7
9113	B	8
9114	C	6
9115	C	8
9116	C	7
9117	C	7
9118	C	7
9119	C	7
9120	C	7
9121	C	6
9122	C	5
9123	B	6
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9125	C	8
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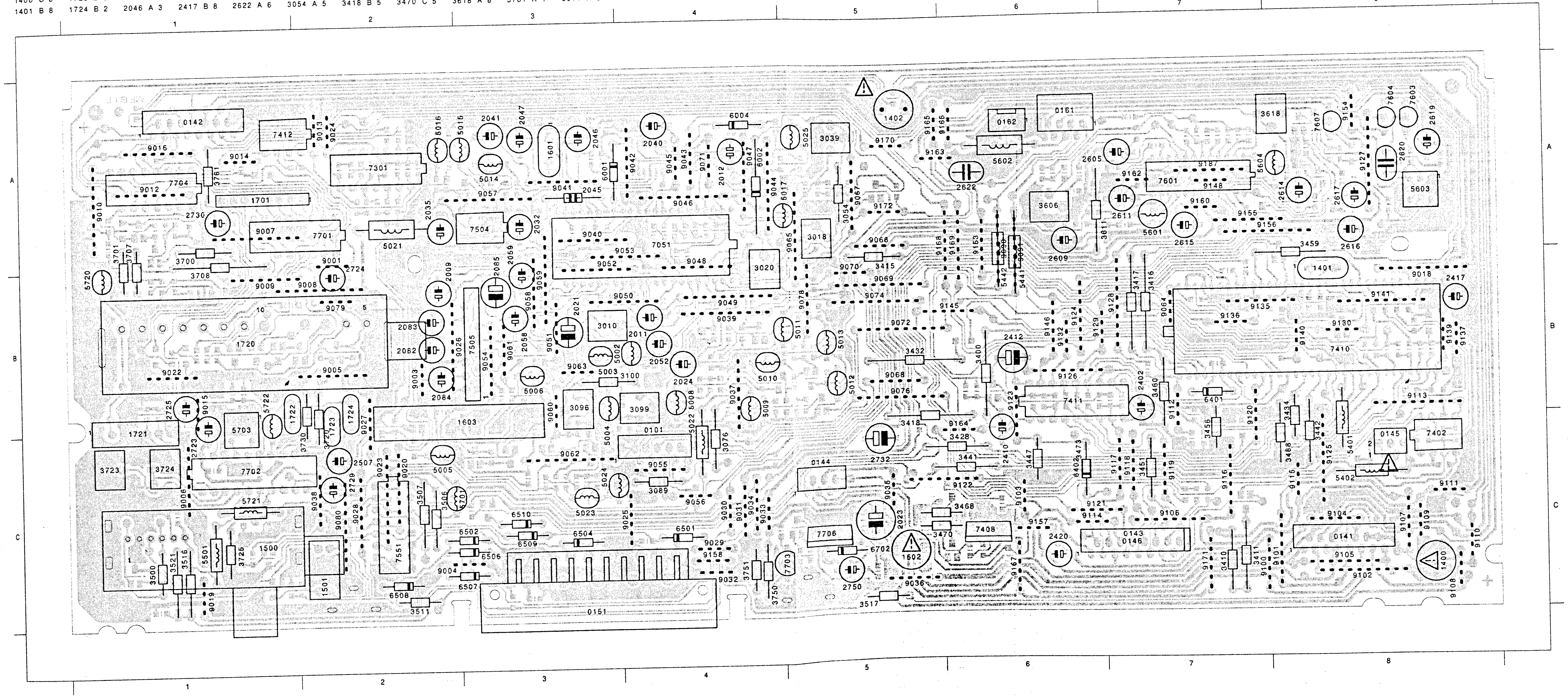
9127	A	8
9128	B	7
9129	B	6
9130	B	8
9132	B	6
9135	B	7
9136	B	7
9137	B	8
9139	B	8
9140	B	8
9141	B	8
9145	B	6
9146	B	6
9148	A	7
9153	A	6
9154	A	8
9155	A	7
9156	A	8
9157	C	6
9158	C	4
9160	A	7
9162	A	7
9163	A	5
9164	C	6
9165	A	5
9166	A	6
9167	C	6
9168	A	6
9169	A	6
9170	A	5
9171	C	7
9172	A	5
9187	A	7


1
2
3
4
5
6
7
8
A
B
C
0142
7412
7301
1601
7704
1701
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9016
9014
9010
2730
9007
7701
5021
7504
2035
2032
2041
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9053
9052
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9057
9041
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6001
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9043
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2012
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3018
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3020
1402
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0162
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7601
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2009
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9119
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5402
0145
7402
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5003
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5501
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1500
1501
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7551
0151
2420
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0146
9121
9114
9157
9103
9106
9116
3410
3411
9171
9101
0141
9105
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9109
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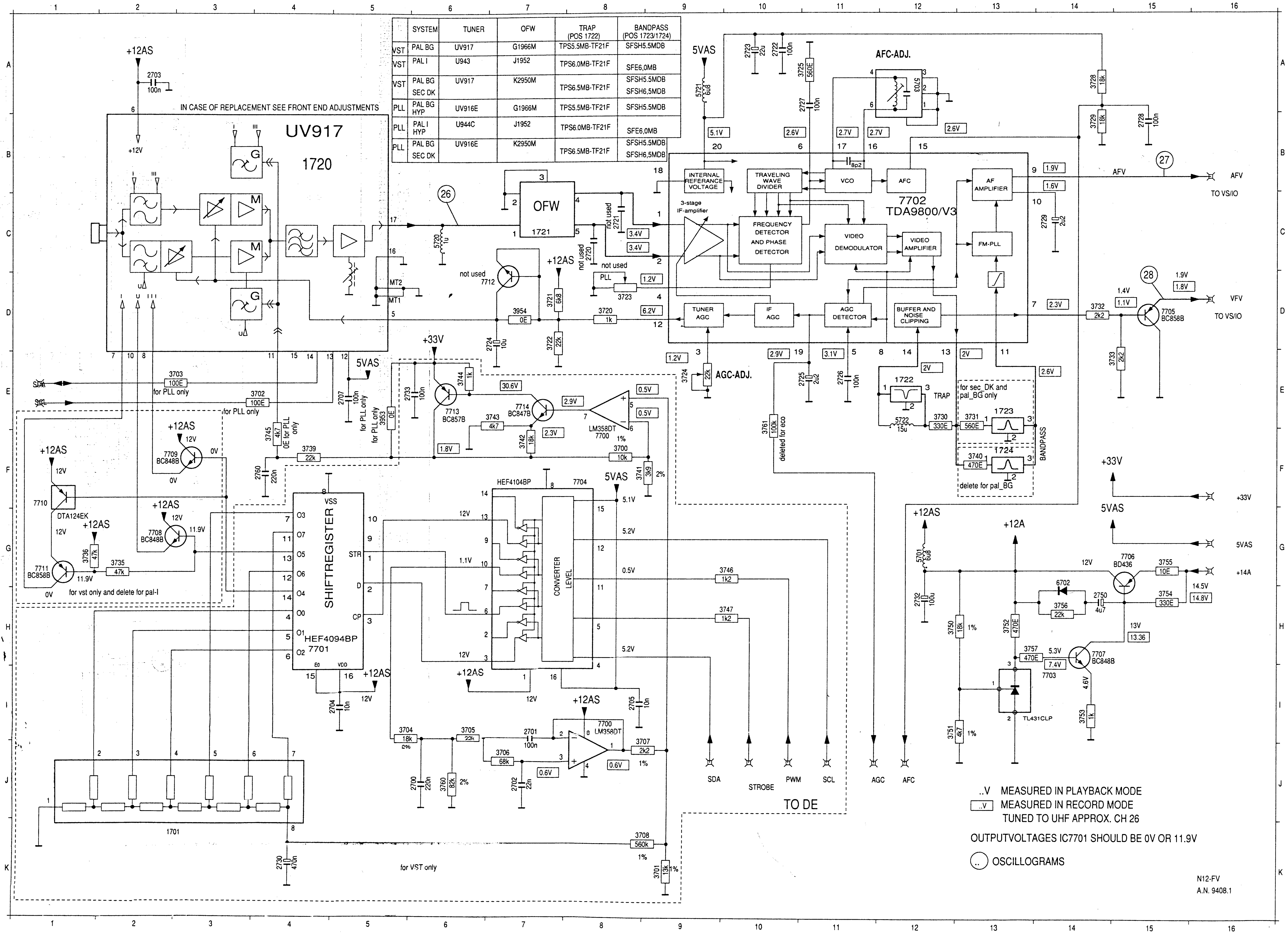
9110
9167
9112
PCS 74525

FAMILY BOARD FRONT END - FV N1 N2


IN CASE OF REPLACEMENT SEE FRONT END ADJUSTMENTS
UV917
1720
+12AS
2703 100n
+12V
MT2
MT1
OFW
1721
26
27
28
5720 1u
not used 7712
3954 0E
3721 6k8
3722 22k
2724 10u
not used 2721
not used 2720
not used
PLL
3723
3720 1k
5VAS
5721 6u8
2723 22u
2722 100n
3725 560E
2727 100n
AFC-ADJ.
5703
INTERNAL REFERANCE VOLTAGE
TRAVELING WAVE DIVIDER
VCO
AFC
AF AMPLIFIER
7702
TDA9800/V3
3-stage IF-amplifier
FREQUENCY DETECTOR AND PHASE DETECTOR
VIDEO DEMODULATOR
VIDEO AMPLIFIER
FM-PLL
TUNER AGC
IF AGC
AGC DETECTOR
BUFFER AND NOISE CLIPPING
AFV
TO VS/IO
VFV
3728 18k
3729 18k
2728 100n
2729 2u2
3732 2k2
3733 2k2
7705 BC858B
3724
AGC-ADJ.
2725 2u2
2726 100n
1722
TRAP
5722 15u
3730 330E
for sec_DK and pal_BG only
1723
3731 560E
1724
3740 470E
BANDPASS
delete for pal_BG
3761 100k deleted for eco
SDA
SCL
3703 100E for PLL only
3702 100E for PLL only
+33V
3744 1k
2733 100n
7713 BC857B
2707 100n for PLL only
3953 0E for PLL only
3745 4k7 0E for PLL only
7714 BC847B
3743 4k7
3742 18k
LM358DT 7700 1%
3700 10k
3741 3k9 2%
3739 22k
2760 220n
7709 BC848B
7710 DTA124EK
7708 BC848B
7711 BC858B
3736 47k
3735 47k
for vst only and delete for pal-I
SHIFTREGISTER
HEF4094BP
7701
VSS
VDD
STR
CP
2704 10n
HEF4104BP
7704
CONVERTER LEVEL
3746 1k2
3747 1k2
2705 10n
3704 18k 2%
3705 22k
2701 100n
3706 68k
7700 LM358DT
3707 2k2
2700 220n
3760 82k 2%
2702 22n
3708 560k 1%
3701 13k 1%
1701
2730 470n
for VST only
STROBE
PWM
AGC
AFC
TO DE
+33V
5VAS
+14A
5701 6u8
2732 100u
+12A
7706 BD436
6702
3755 10E
3756 22k
2750 4u7
3754 330E
3750 18k 1%
3752 470E
3757 470E
7707 BC848B
7703
TL431CLP
3751 4k7 1%
3753 1k
N12-FV
A.N. 9408.1

	SYSTEM	TUNER	OFW	TRAP (POS 1722)	BANDPASS (POS 1723/1724)
VST	PAL BG	UV917	G1966M	TPS5.5MB-TF21F	SFSH5.5MDB
VST	PAL I	U943	J1952	TPS6.0MB-TF21F	SFE6,0MB
VST	PAL BG SEC DK	UV917	K2950M	TPS6.5MB-TF21F	SFSH5.5MDB SFSH6,5MDB
PLL	PAL BG HYP	UV916E	G1966M	TPS5.5MB-TF21F	SFSH5.5MDB
PLL	PAL I HYP	U944C	J1952	TPS6.0MB-TF21F	SFE6,0MB
PLL	PAL BG SEC DK	UV916E	K2950M	TPS6.5MB-TF21F	SFSH5.5MDB SFSH6,5MDB

..V MEASURED IN PLAYBACK MODE

..V MEASURED IN RECORD MODE

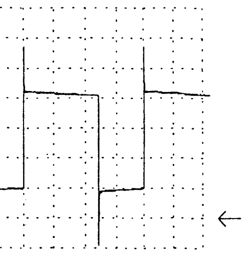
TUNED TO UHF APPROX. CH 26

OUTPUTVOLTAGES IC7701 SHOULD BE 0V OR 11.9V

◯ OSCILLOGRAMS

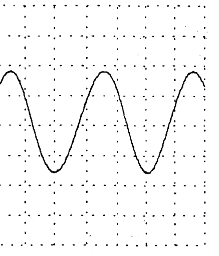
1701	K 2
1720	B 4
1721	C 7
1722	E12
1723	E13
1724	F13
2700	J 6
2701	I 7
2702	J 7
2703	A 2
2704	I 5
2705	I 8
2707	E 5
2720	C 8
2721	C 8
2722	A10
2723	A10
2724	D 7
2725	E11
2726	E11
2727	A11
2728	B15
2729	C14
2730	K 4
2732	H12
2733	E 5
2750	H14
2760	F 4
3700	F 8
3701	K 9
3702	E 4
3703	E 3
3704	I 5
3705	I 6
3706	J 7
3707	J 9
3708	K 9
3720	D 8
3721	D 7
3722	D 7
3723	D 8
3724	E 9
3725	A11
3728	A14
3729	B14
3730	E12
3731	E13
3732	D14
3733	E15
3735	G 2
3736	G 1
3739	F 4
3740	F13
3741	F 8
3742	F 7
3743	E 7
3744	E 6
3745	F 4
3746	G10
3747	H10
3750	H12
3751	I12
3752	H13
3753	I14
3754	H15
3755	G15
3756	H14
3757	H13
3760	J 6
3761	E10
3953	E 5
3954	D 7
5701	G12
5703	A12
5720	C 6
5721	A 9
5722	E12
6702	H14
7700	I 8
7700	F 8
7701	H 4
7702	C12
7703	I14
7704	F 8
7705	D15
7706	G15
7707	H14
7708	G 2
7709	F 3
7710	F 1
7711	G 1
7712	D 7
7713	E 6
7714	E 7

/Div, 10 ms/Div



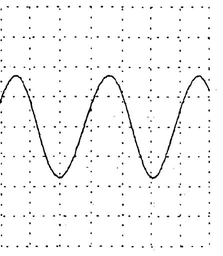
F8,1 Osc. 36

V/Div, 5 us/Div



F8,3 Osc. 37
se head (AEH1)

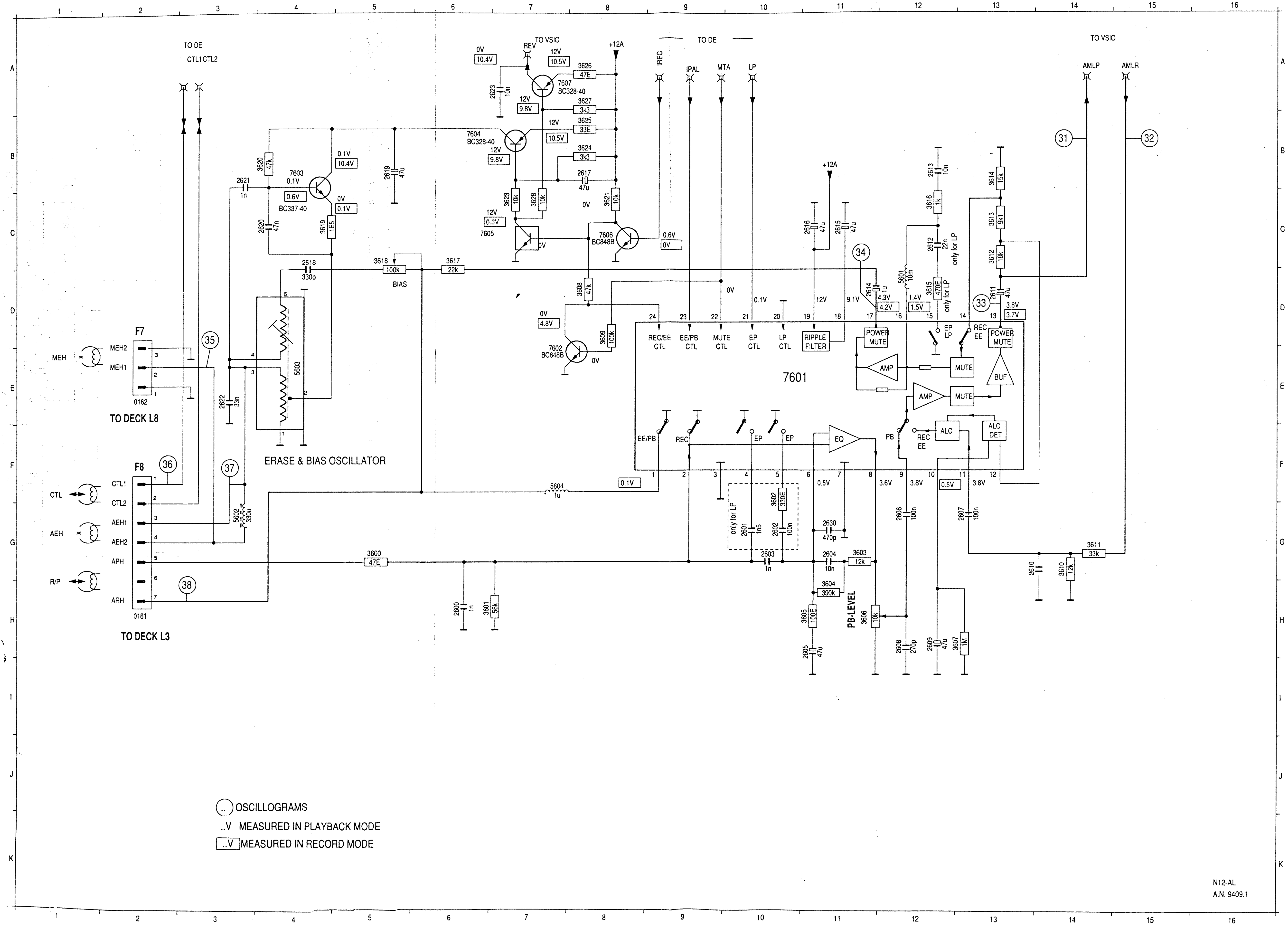
V/Div, 5 us/Div



r F8,7 Osc. 38
P Head (ARH)

rams are measured in
Record .

FAMILY BOARD AUDIO LINEAR - AL N1 N2


TO DE
CTL1 CTL2
TO VSIO
REV
+12A
TO DE
IREC
IPAL
MTA
LP
TO VSIO
AMLP
AMLR
31
32
7607 BC328-40
7604 BC328-40
7603 BC337-40
7605
7606 BC848B
7602 BC848B
7601
3626 47E
3627 3k3
3625 33E
3624 3k3
2617 47u
2623 10n
3620 47k
2621 1n
2620 47n
3619 1E5
2619 47u
3623 10k
3628 10k
3621 10k
2618 330p
3618 100k
BIAS
3617 22k
3608 47k
3609 100k
5603
2622 33n
ERASE & BIAS OSCILLATOR
F7
MEH
MEH2
MEH1
0162
TO DECK L8
35
F8
36
37
38
CTL
CTL1
CTL2
AEH
AEH1
AEH2
APH
R/P
ARH
0161
TO DECK L3
5602 330u
3600 47E
2600 1n
3601 56k
5604 1u
REC/EE CTL
EE/PB CTL
MUTE CTL
EP CTL
LP CTL
RIPPLE FILTER
POWER MUTE
AMP
MUTE
BUF
ALC
ALC DET
EQ
EE/PB
REC
EP
PB
REC EE
EP LP
+12A
2616 47u
2615 47u
34
2614 1u
5601 10m
2613 10n
3616 1k
2612 22n
only for LP
3615 470E
3614 15k
3613 9k1
3612 18k
33
2611 47u
only for LP
2601 1n5
3602 330E
2602 100n
2630 470p
2603 1n
2604 10n
3603 12k
3604 390k
3605 100E
2605 47u
PB-LEVEL
3606 10k
2606 100n
2608 270p
2609 47u
3607 1M
2607 100n
2610
3610 12k
3611 33k
0V
10.4V
12V
10.5V
9.8V
0.1V
0.6V
0.3V
4.8V
4.3V
4.2V
1.4V
1.5V
3.8V
3.7V
9.1V
3.6V
0.5V

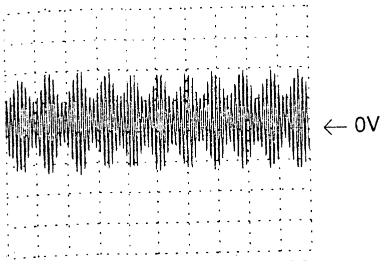
(..) OSCILLOGRAMS
..V MEASURED IN PLAYBACK MODE
[..V] MEASURED IN RECORD MODE

N12-AL
A.N. 9409.1

0161	H 2
0162	E 2
2600	H 6
2601	G10
2602	G10
2603	G10
2604	G11
2605	H11
2606	G12
2607	G13
2608	H12
2609	H12
2610	G13
2611	D13
2612	C12
2613	B12
2614	D11
2615	C11
2616	C11
2617	B 8
2618	C 4
2619	B 5
2620	C 4
2621	B 3
2622	E 3
2623	A 7
2630	G11
3600	G 5
3601	H 6
3602	F10
3603	G11
3604	H11
3605	H11
3606	H11
3607	H13
3608	D 8
3609	D 8
3610	G14
3611	G14
3612	C13
3613	C13
3614	B13
3615	D12
3616	C12
3617	C 6
3618	C 5
3619	C 4
3620	B 4
3621	C 8
3623	C 7
3624	B 8
3625	B 8
3626	A 8
3627	A 8
3628	C 7
5601	D12
5602	G 3
5603	E 4
5604	F 7
7601	E10
7602	E 7
7603	B 4
7604	B 6
7605	C 6
7606	C 8
7607	A 7

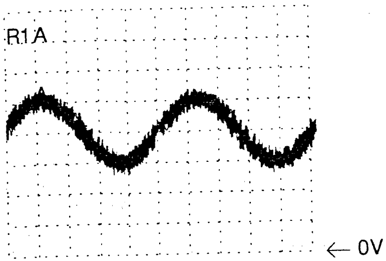
OSCILLOGRAMS FRONTEND - FV

A: DC, 0.1 V/Div 0.2 us/Div



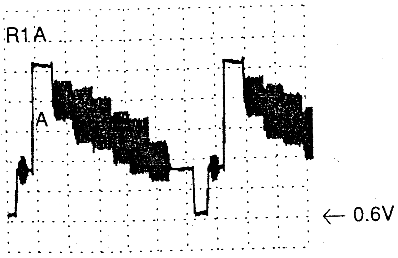
Tuner 1720 Pin 17 Osc. 26

A: DC, 0.5 V/Div 0.2 ms/Div



IC 7702 Pin 9 Osc. 27
AFV

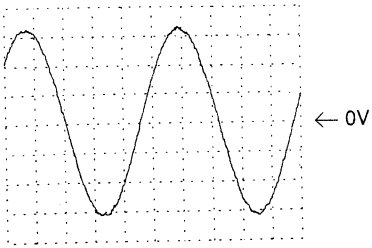
A: DC, 0.2 V/Div 10 us/Div



Transistor 7705-Emitter Osc. 28
VFV

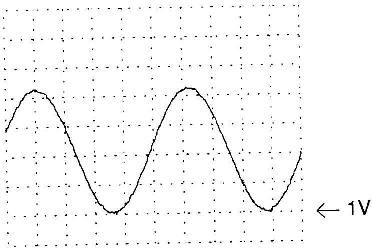
OSCILLOGRAMS AUDIO LINEAR - AL

A: DC, 0.2 V/Div, 0.2 ms/Div



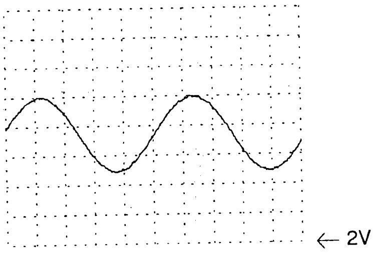
Capacitor 2611 Osc. 31
AMLP

A: DC, 0.2 V/Div, 0.2 ms/Div



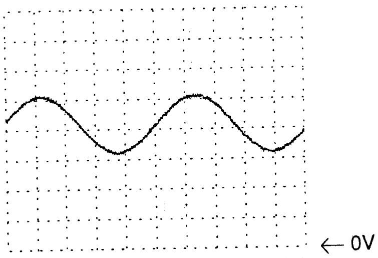
Resistor 3611 Osc. 32
AMLR

A: DC, 0.5 V/Div, 0.2 ms/Div



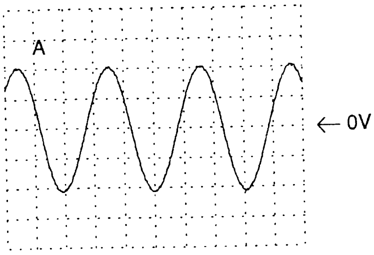
IC 7601 Pin 13 Osc. 33

A: DC, 1 V/Div, 0.2 ms/Div



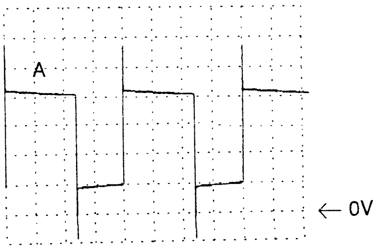
IC 7601 Pin 17 Osc. 34

A: DC, 0.1 V/Div, 5 us/Div



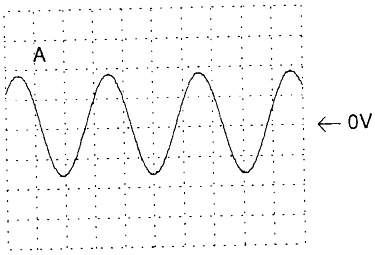
Connector F7,2 Osc. 35
Main erase head (MEH1)

A: DC, 1 V/Div, 10 ms/Div



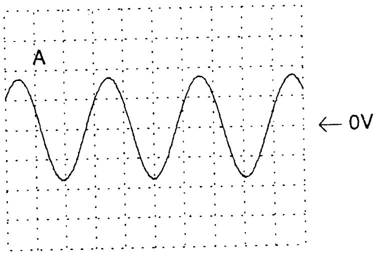
Connector F8,1 Osc. 36
CTL1

A: DC, 20 V/Div, 5 us/Div



Connector F8,3 Osc. 37
Audio erase head (AEH1)

A: DC, 10 V/Div, 5 us/Div

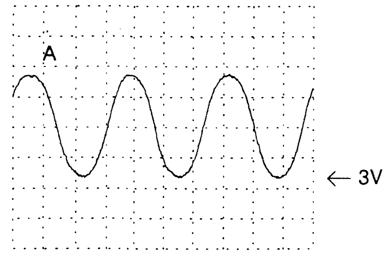


Connector F8,7 Osc. 38
Audio R/P Head (ARH)

Oscillograms are measured in Position Record .

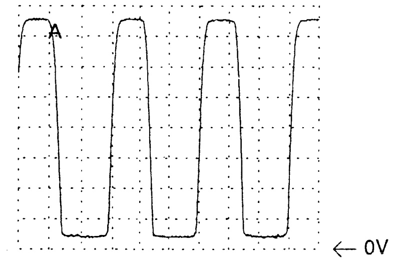
TAPE DECK SENSOR PANEL

A: AC, 0.5 V/Div, 0.2 ms/Div



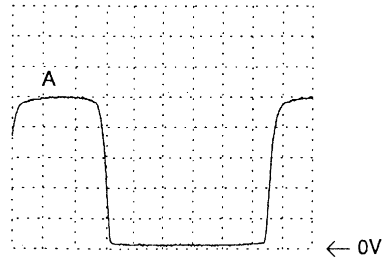
Connector L2,2
FG

A: DC, 0.5 V/Div, 2 ms/Div



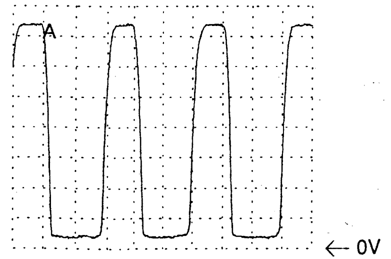
Connector L2,9
WTL Wind

A: DC, 1 V/Div, 2 ms/Div



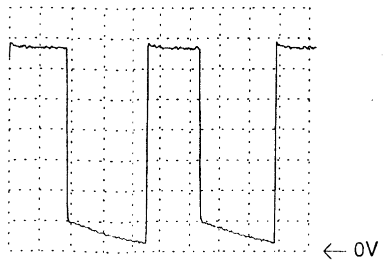
Connector L2,11
FTA Threading

A: DC, 0.5 V/Div, 2 ms/Div

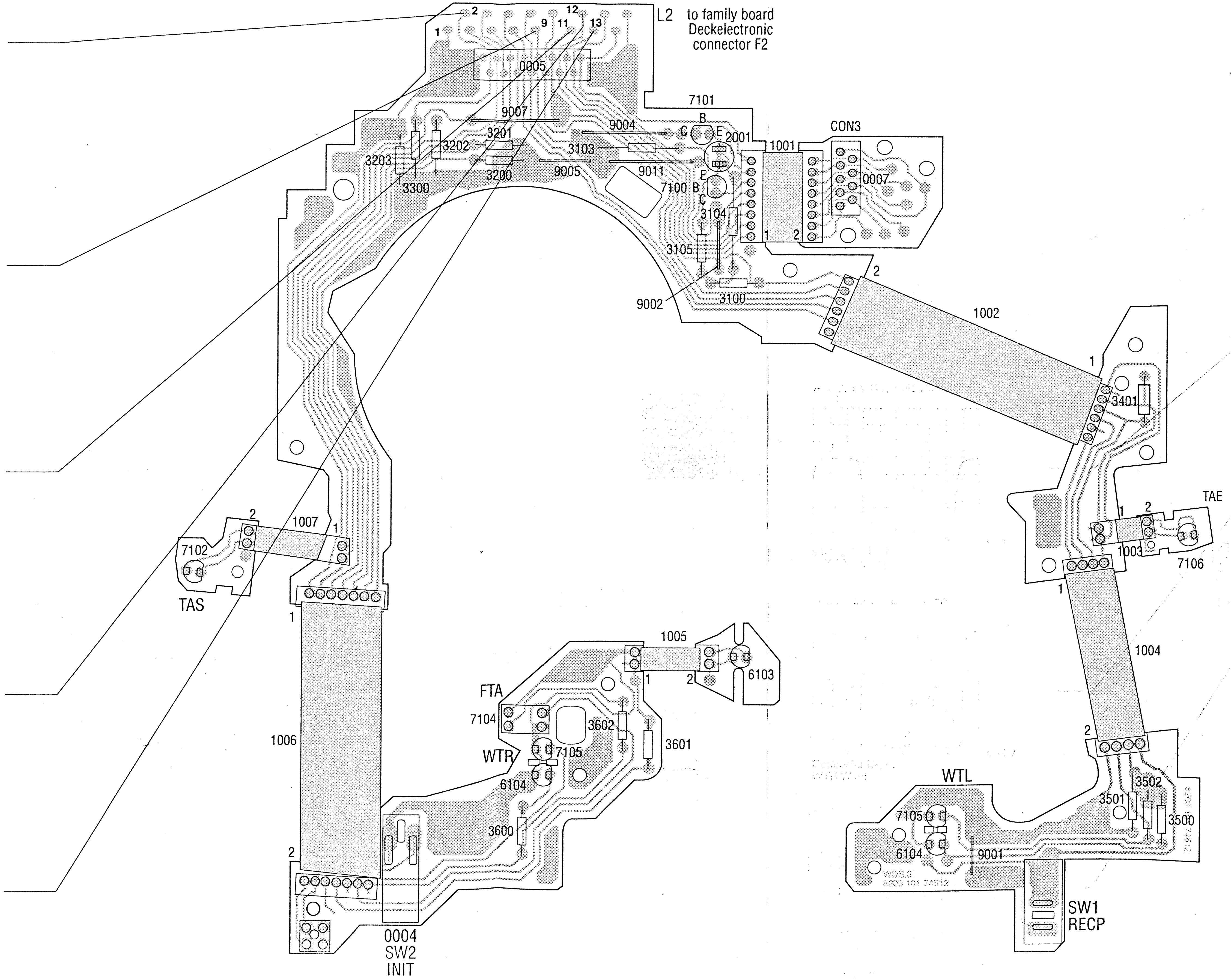


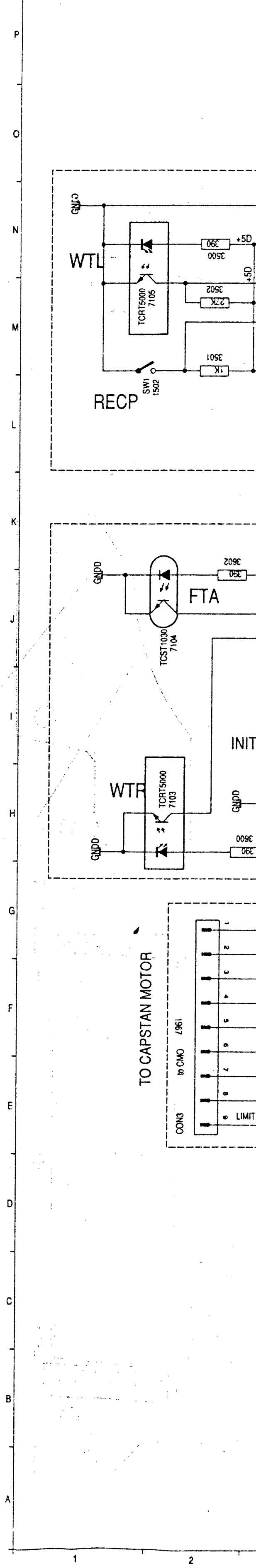
Connector L2,12
WTR Wind

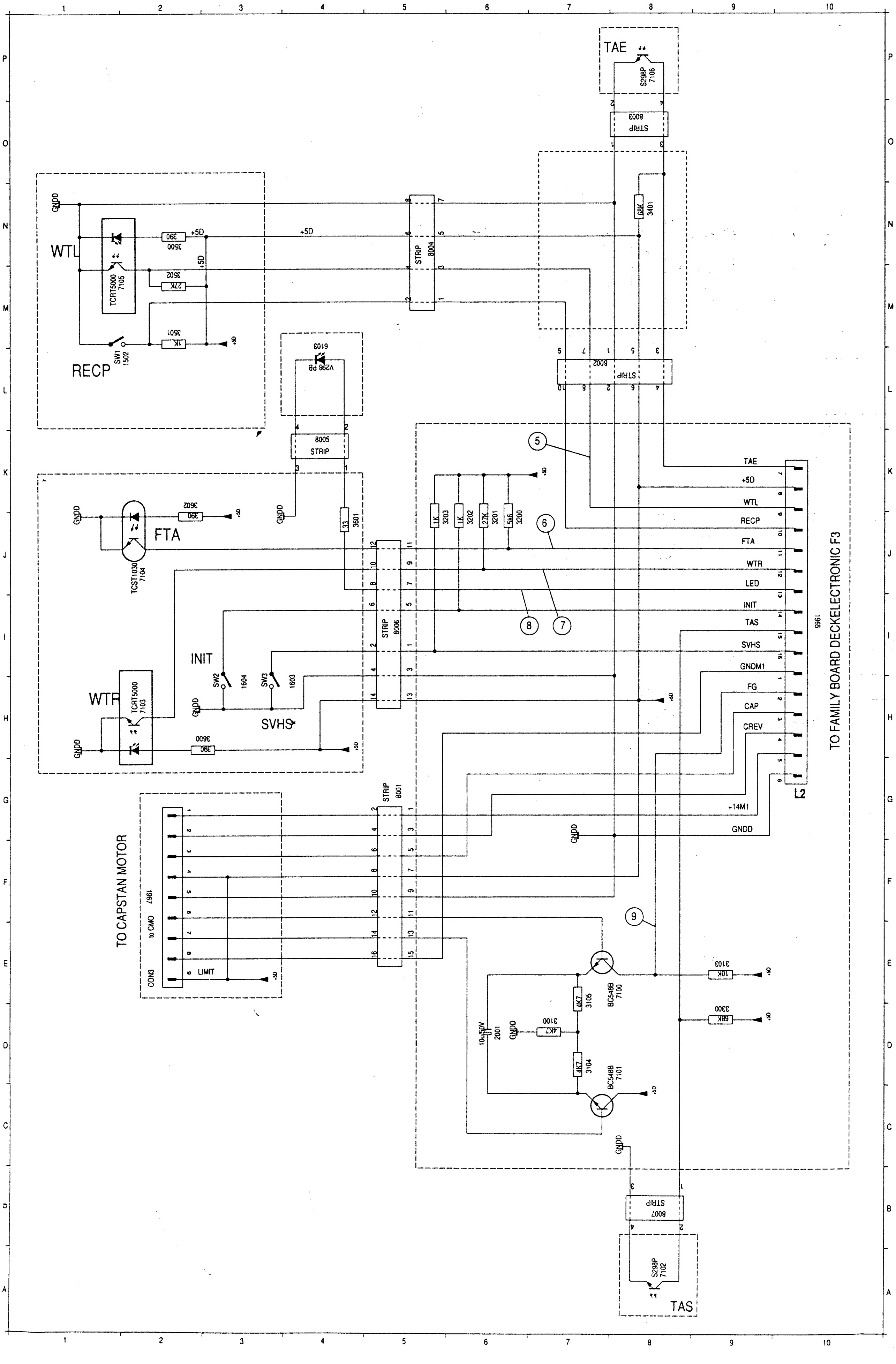
A: DC, 0.5 V/Div, 0.5 ms/Div



Connector L2,13
LED

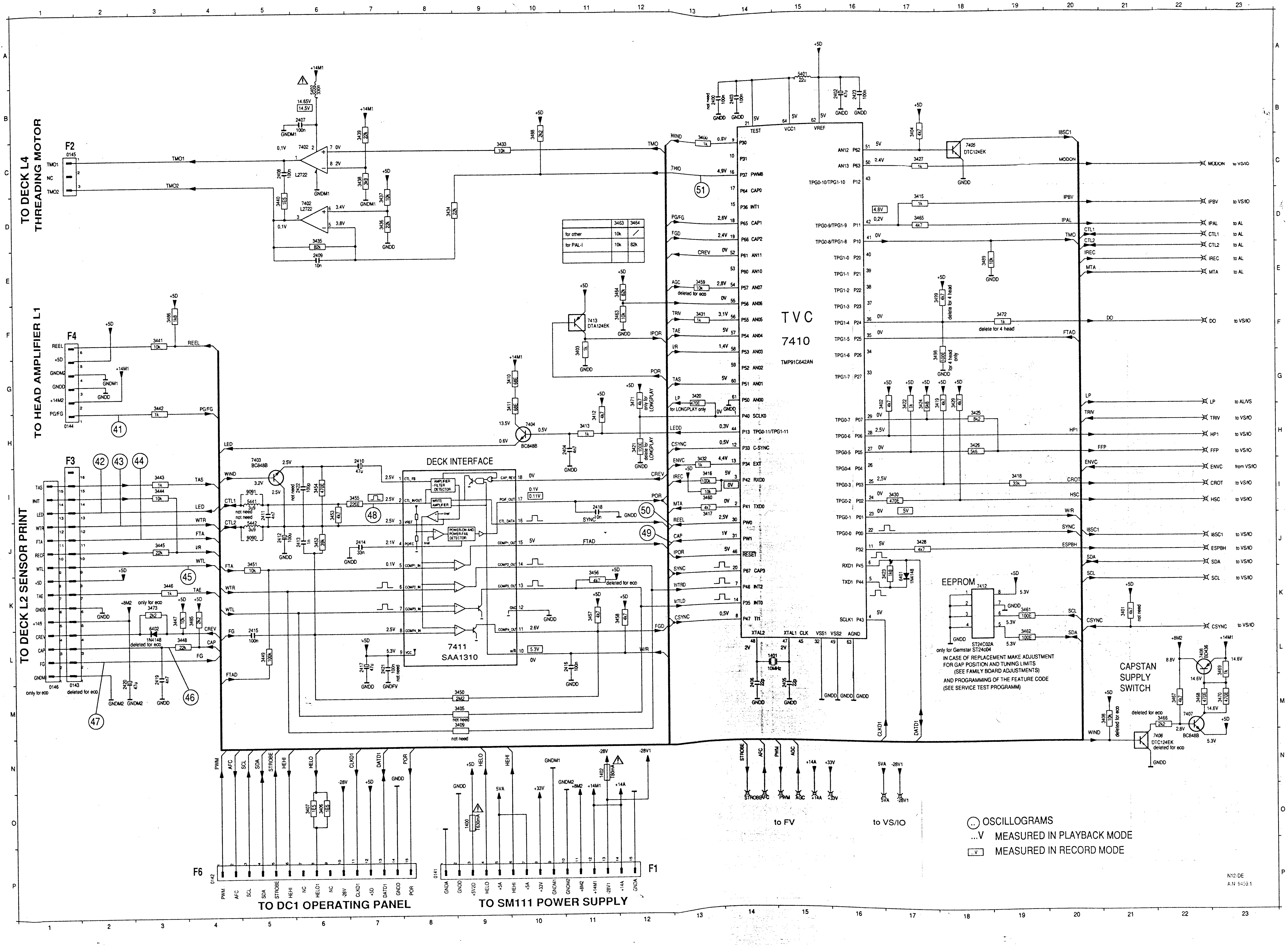

L2 to family board
Deckelectronic
connector F2
1
2
9
11
12
13
0005
7101
9007
9004
B
C
E
2001
3201
3202
3203
3103
3200
9005
9011
3300
7100
1001
CON3
0007
3104
3105
9002
3100
1002
3401
TAE
1003
7106
1004
1007
7102
TAS
1006
1005
6103
FTA
7104
3602
3601
WTR
7105
6104
3600
0004
SW2
INIT
WTL
3502
3501
3500
9001
SW1
RECP
8203 101 74512


WTL
RECP
FTA
INIT
WTR
TO CAPSTAN MOTOR
CON3


TAE
S298P 7106
STRIP 8003
68K 3401
GNDD
WTL
TCRT5000 7105
390 3500
+5D
27K 3502
1K 3501
SW1 1502
RECP
STRIP 8004
V298 PB 6103
8005 STRIP
STRIP 8002
GNDD
390 3602
FTA
TCST1030 7104
33 3601
STRIP 8006
1K 3203
1K 3202
27K 3201
5k6 3200
INIT
SW2 1604
SW3 1603
SVHS
WTR
TCRT5000 7103
390 3600
TAE
+5D
WTL
RECP
FTA
WTR
LED
INIT
TAS
SVHS
GNDM1
FG
CAP
CREV
+14M1
GNDD
1965
L2
TO FAMILY BOARD DECKELECTRONIC F3
TO CAPSTAN MOTOR
1967
to CMO
CON3
LIMIT
STRIP 8001
BC548B 7100
BC548B 7101
4K7 3105
4K7 3100
4K7 3104
10µ50V 2001
10K 3103
68K 3300
STRIP 8007
S298P 7102
TAS
5
6
7
8
9
1
2
3
4
5
6
7
8
9
10
P
O
N
M
L
K
J
I
H
G
F
E
D
C
B
A

SW1	L 1
MP101	K 9
8007	B 8
8006	I 5
8005	K 4
8004	N 5
8003	O 8
8002	L 7
8001	G 5
7106	P 8
7105	M 1
7104	J 2
7103	H 2
7102	A 8
7101	D 8
7100	E 8
6103	L 4
3602	K 2
3601	J 4
3600	H 2
3502	M 2
3501	M 2
3500	N 2
3401	N 8
3300	D 9
3203	J 5
3202	J 6
3201	J 6
3200	J 6
3105	E 7
3104	D 7
3103	E 9
3100	D 7
2001	D 6
1969	A 7
1968	A 6
1967	F 2
1965	I10
1604	H 3
1603	H 4

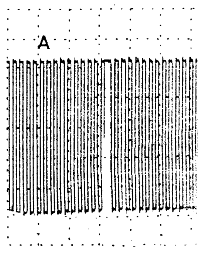
FAMILY BOARD DECKELECTRONIC - DE **N1** **N2**


TO DECK L4 THREADING MOTOR
TO HEAD AMPLIFIER L1
TO DECK L2 SENSOR PRINT
F2
F4
F3
F6
F1
TVC
7410
TMP91C642AN
DECK INTERFACE
7411
SAA1310
EEPROM
7412
ST24C02A
only for Gemstar ST24c04
IN CASE OF REPLACEMENT MAKE ADJUSTMENT FOR GAP POSITION AND TUNING LIMITS (SEE FAMILY BOARD ADJUSTMENTS)
AND PROGRAMMING OF THE FEATURE CODE (SEE SERVICE TEST PROGRAMM)
CAPSTAN SUPPLY SWITCH
TO DC1 OPERATING PANEL
TO SM111 POWER SUPPLY
to FV
to VS/IO
OSCILLOGRAMS
...V MEASURED IN PLAYBACK MODE
V MEASURED IN RECORD MODE
N12 DE
A.N. 9409.1

0141	P 8
0142	P 4
0143	L 1
0144	H 1
0145	C 2
0146	L 1
1400	O 9
1401	L14
1402	N11
2400	B13
2402	B16
2403	B14
2404	H11
2405	M15
2406	M14
2407	B 6
2408	C 5
2409	E 6
2410	H 7
2411	I 5
2412	J 5
2413	J 6
2414	J 7
2415	L 5
2416	L11
2417	L 7
2418	I11
2419	L 3
2420	L 2
2421	L 7
2422	I 6
2423	B16
3400	C13
3401	K21
3402	G16
3403	F11
3404	B17
3405	M 9
3406	O 6
3407	O 6
3408	M21
3409	M 9
3410	G10
3411	G10
3412	H11
3413	H11
3415	D17
3416	I13
3417	J13
3418	I19
3419	G18
3420	G13
3421	H12
3422	G17
3423	K17
3424	G17
3425	H18
3426	H18
3427	C17
3428	J17
3429	G18
3430	I17
3431	F13
3432	I13
3433	C 9
3434	D 8
3435	D 6
3436	D 7
3437	D 7
3438	C 7
3439	B 7
3440	D 5
3441	F 3
3442	G 3
3443	I 3
3444	I 3
3445	J 3
3446	K 3
3447	K 3
3448	L 3
3449	L 5
3450	M 9
3451	J 5
3452	J 6
3453	I 6
3454	I 6
3455	I 7
3456	K11
3457	K11
3458	K12
3459	E13
3460	I13
3461	K19
3462	L19
3463	F12
3464	E12
3465	D17
3466	M22
3467	M22
3468	M22
3469	L23
3470	M23
3471	G12
3472	F19
3473	K 3
3485	K 4
3486	F 3
3488	B10
3489	E18
3498	G18
3499	F18
5401	A15
5402	B 6
5441	I 5
5442	J 5
6401	K17
6402	L 3
7402	C 6
7402	D 6
7403	H 5
7404	H10
7405	C18
7406	N21
7407	M22
7408	L22
7410	F15
7411	L 8
7412	K18
7413	F11
9090	J 5
9091	I 5

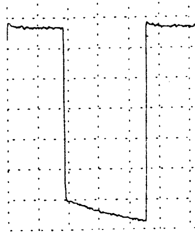
OSCILLOGR

A: DC, 1 V/Div, 10 m



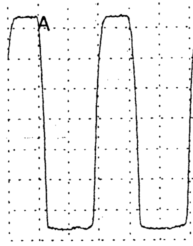
Connector F4,1
PG/FG

A: DC, 0.5 V/Div, 0.5



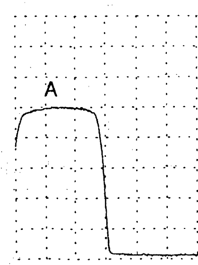
Connector F3,13
LED

A: DC, 0.5 V/Div, 2 m



Connector F3,12
WTR Wind

A: DC, 1 V/Div, 2 ms

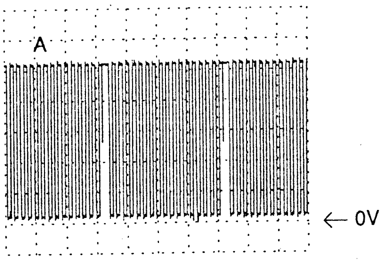


Connector F3,11
FTA Threading

OSCILLOGRAMS DECKELECTRONIC - DE

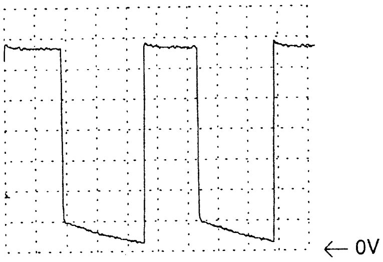
0141	P 8
0142	P 4
0143	L 1
0144	H 1
0145	C 2
0146	L 1
1400	O 9
1401	L14
1402	N11
2400	B13
2402	B16
2403	B14
2404	H11
2405	M15
2406	M14
2407	B 6
2408	C 5
2409	E 6
2410	H 7
2411	I 5
2412	J 5
2413	J 6
2414	J 7
2415	L 5
2416	L11
2417	L 7
2418	I11
2419	L 3
2420	L 2
2421	L 7
2422	I 6
2423	B16
3400	C13
3401	K21
3402	G16
3403	F11
3404	B17
3405	M 9
3406	O 6
3407	O 6
3408	M21
3409	M 9
3410	G10
3411	G10
3412	H11
3413	H11
3415	D17
3416	I13
3417	J13
3418	I19
3419	G18
3420	G13
3421	H12
3422	G17
3423	K17
3424	G17
3425	H18
3426	H18
3427	C17
3428	J17
3429	G18
3430	I17
3431	F13
3432	I13
3433	C 9
3434	D 8
3435	D 6
3436	D 7
3437	D 7
3438	C 7
3439	B 7
3440	D 5
3441	F 3
3442	G 3
3443	I 3
3444	I 3
3445	J 3
3446	K 3
3447	K 3
3448	L 3
3449	L 5
3450	M 9
3451	J 5
3452	J 6
3453	I 6
3454	I 6
3455	I 7
3456	K11
3457	K11
3458	K12
3459	E13
3460	I13
3461	K19
3462	L19
3463	F12
3464	E12
3465	D17
3466	M22
3467	M22
3468	M22
3469	L23
3470	M23
3471	G12
3472	F19
3473	K 3
3485	K 4
3486	F 3
3488	B10
3489	E18
3498	G18
3499	F18
5401	A15
5402	B 6
5441	I 5
5442	J 5
6401	K17
6402	L 3
7402	C 6
7402	D 6
7403	H 5
7404	H10
7405	C18
7406	N21
7407	M22
7408	L22
7410	F15
7411	L 8
7412	K18
7413	F11
9090	J 5
9091	I 5

A: DC, 1 V/Div, 10 ms/Div



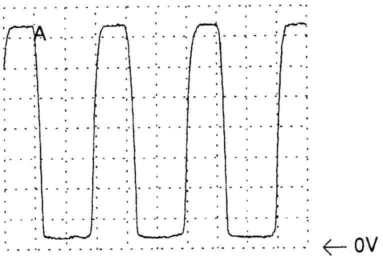
Connector F4,1 Osc. 41
PG/FG

A: DC, 0.5 V/Div, 0.5 ms/Div



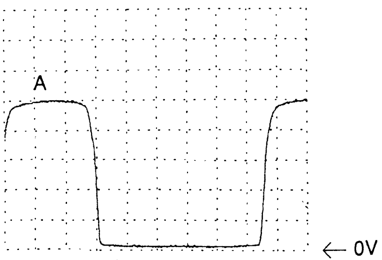
Connector F3,13 Osc. 42
LED

A: DC, 0.5 V/Div, 2 ms/Div



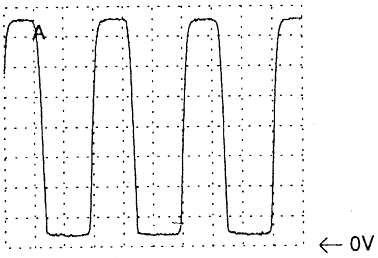
Connector F3,12 Osc. 43
WTR Wind

A: DC, 1 V/Div, 2 ms/Div



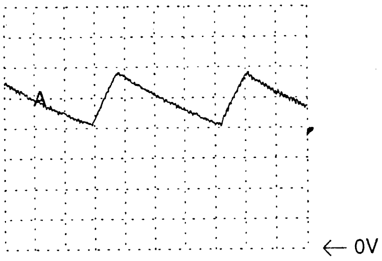
Connector F3,11 Osc. 44
FTA Threading

A: DC, 0.5 V/Div, 2 ms/Div



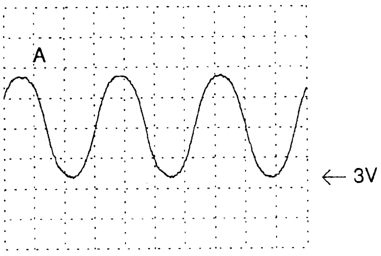
Connector F3,9 Osc. 45
WTL Wind

A: DC, 0.2 V/Div, 10 us/Div



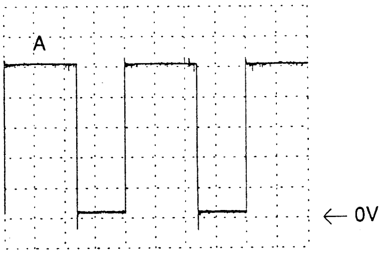
Connector F3,3 Osc. 46
CAP

A: AC, 0.5 V/Div, 0.2 ms/Div



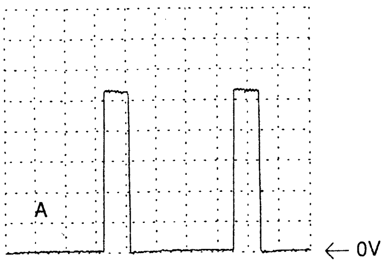
Connector F3,2 Osc. 47
FG

A: DC, 1 V/Div, 10 ms/Div



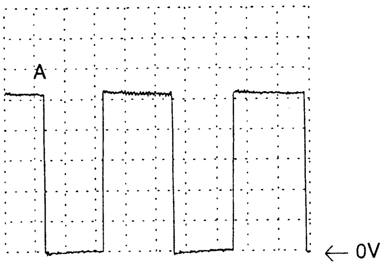
IC 7411 Pin 2 Osc. 48
CTL1 REC

A: DC, 1 V/Div, 10 us/Div



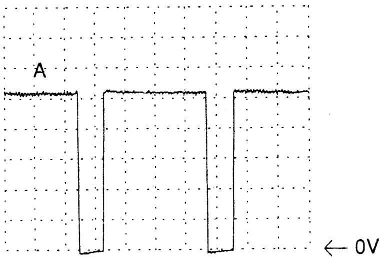
IC 7410 Pin 31 Osc. 49
CAP

A: DC, 1 V/Div, 10 us/Div



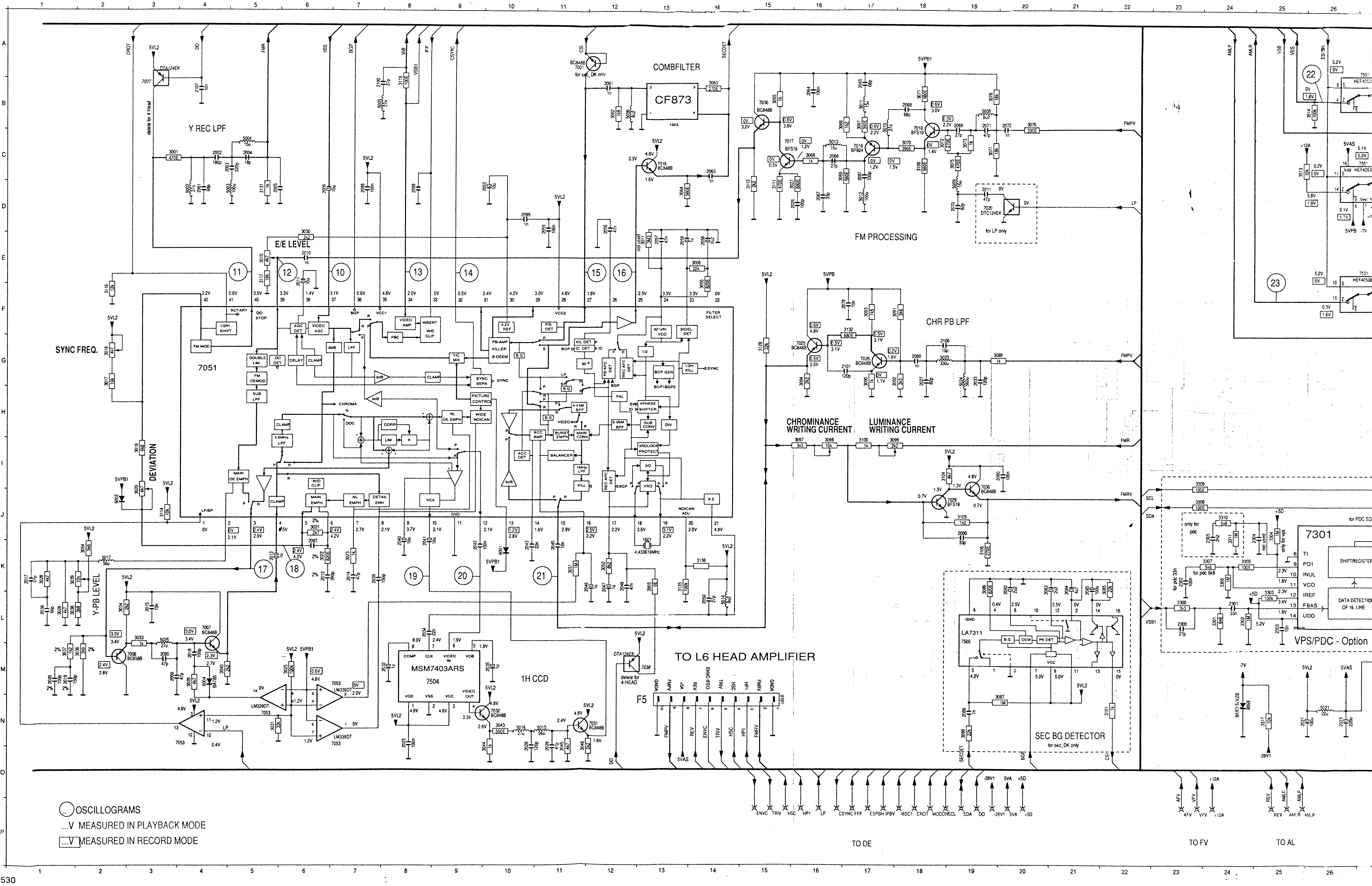
IC 7410 Pin 30 Osc. 5 0
REEL

A: DC, 1 V/Div, 10 us/Div



IC 7410 Pin 16 Osc. 51
THIO

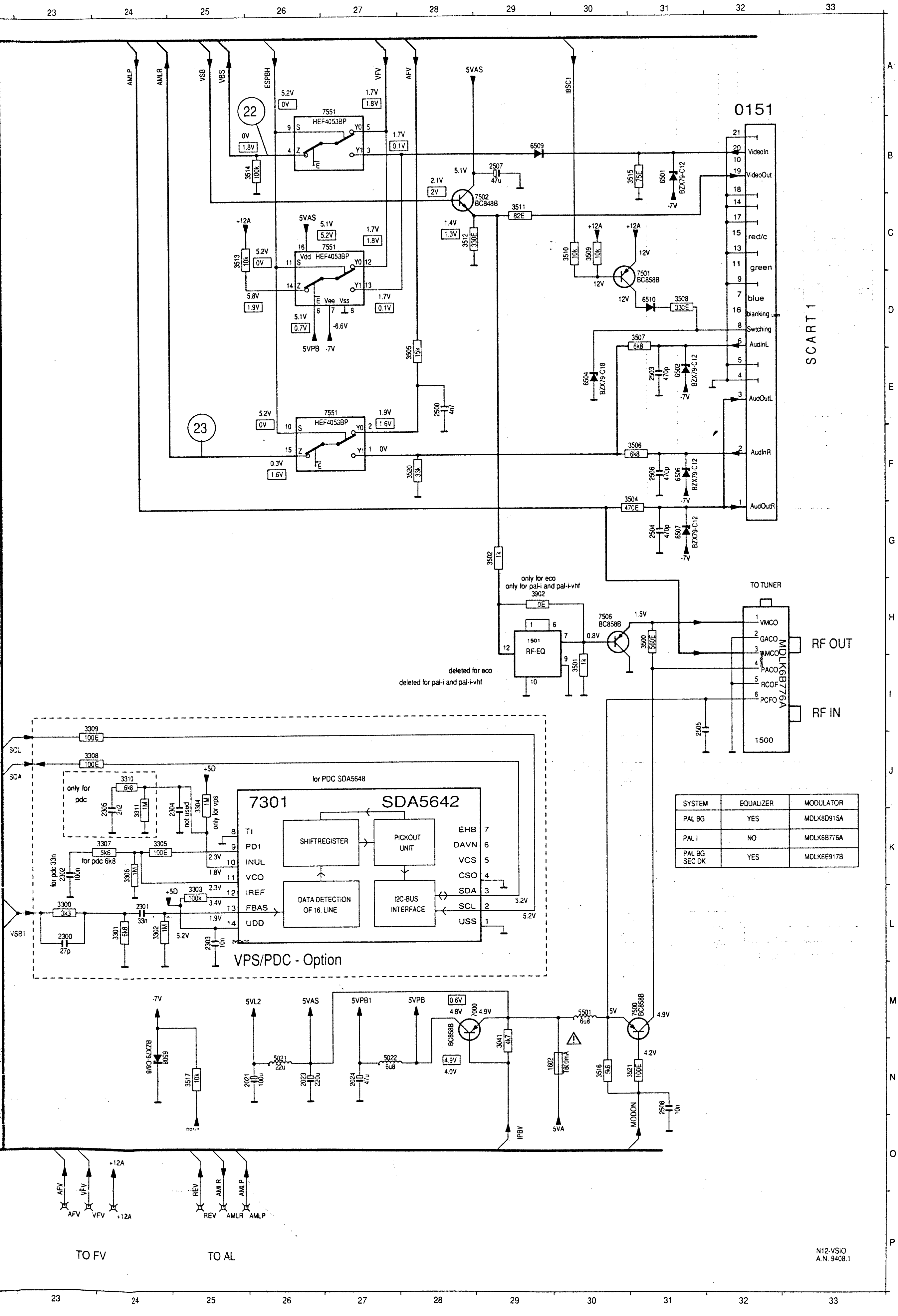
FAMILY BOARD VIDEOSIGNALPROCESSING, IN/OUT - VSIO **N1** **N2**


Y REC LPF
COMBFILTER
CF873
FM PROCESSING
E/E LEVEL
SYNC FREQ.
7051
CHR PB LPF
CHROMINANCE WRITING CURRENT
LUMINANCE WRITING CURRENT
DEVIATION
Y-PB LEVEL
MSM7403ARS
7504
1H CCD
TO L6 HEAD AMPLIFIER
F5
LA7311
SEC BG DETECTOR
for sec_DK only
7301
VPS/PDC - Option
SHIFTREGISTER
DATA DETECTION OF 16 LINE
TO DE
TO FV
TO AL
FMPV
LP
FMR
FMRV
SCL
SDA
VSB1
CROT
DO
FMR
VBS
BGP
VSB
FP
CSYNC
CSI
SECDET
AMLP
AMLR
ESPBH
ENVC TRIV HSC HP1 LP CSYNC FFP ESPBH IPBV I8SC1 CROT MODONSCL SDA DO -28V1 5VA +5D
AFV VFV +12A
REV AMLR AMLP

◯ OSCILLOGRAMS

...V MEASURED IN PLAYBACK MODE

...V MEASURED IN RECORD MODE


23
24
25
26
27
28
29
30
31
32
33
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
AMLP
AMLR
VSB
VBS
ESPBH
VFV
AFV
5VAS
I8SC1
22
23
7551
HEF4053BP
Vdd
Vee
Vss
S
Z
E
Y0
Y1
5.2V
0V
1.7V
1.8V
0.1V
3514
100k
6509
2507
47u
7502
BC848B
3511
82E
3512
330E
3513
10k
5.8V
1.9V
5.1V
0.7V
5VPB
-7V
-6.6V
2.1V
2V
1.4V
1.3V
3505
15k
2500
4n7
1.6V
0.3V
3520
33k
0151
VideoIn
VideoOut
red/c
green
blue
blanking
Switching
AudInL
AudOutL
AudInR
AudOutR
SCART 1
3515
75E
6501
BZX79-C12
+12A
3510
10k
3509
10k
7501
BC858B
12V
6510
3508
330E
3507
6k8
6504
BZX79-C18
2503
470p
6502
3506
6k8
2506
470p
6506
3504
470E
2504
470p
6507
3502
1k
only for eco
only for pal-i and pal-i+vhf
3902
0E
1501
RF-EQ
deleted for eco
deleted for pal-i and pal-i+vhf
3501
1k
7506
BC858B
0.8V
1.5V
3500
560E
TO TUNER
VMCO
GACO
AMCO
PACO
RCOF
PCFO
MDLK6B776A
1500
RF OUT
RF IN
2505
SCL
SDA
VSB1
3309
100E
3308
100E
+5D
only for pdc
3310
6k8
2305
2n2
3311
1M
2304
not used
3304
1M
only for vps
for PDC SDA5648
7301
SDA5642
TI
PD1
INUL
VCO
IREF
FBAS
UDD
EHB
DAVN
VCS
CSO
SDA
SCL
USS
SHIFTREGISTER
PICKOUT UNIT
DATA DETECTION OF 16. LINE
I2C-BUS INTERFACE
3307
5k6
for pdc 6k8
3305
100E
2302
100n
for pdc 33n
3306
1M
3303
100k
2.3V
1.8V
3.4V
1.9V
5.2V
3300
3k3
2301
33n
2300
27p
3301
6k8
3302
1M
2303
10n
VPS/PDC - Option
6508
BZX79-C6V8
3517
10k
5VL2
5021
22u
2021
100u
2023
220u
5VPB1
5022
6u8
2024
47u
7000
BC858B
4.8V
4.9V
4.0V
0.6V
3041
4k7
IPBV
1602
1600mA
5VA
5501
6u8
5V
7500
BC858B
4.2V
3516
5k6
3521
100E
2508
10n
MODON
AFV
VFV
+12A
REV
AMLR
AMLP
TO FV
TO AL
N12-VSIO
A.N. 9408.1

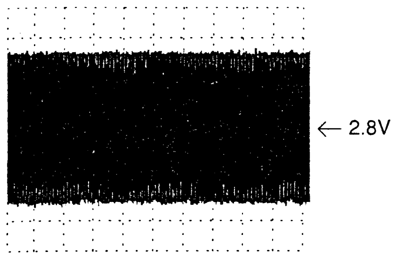
SYSTEM	EQUALIZER	MODULATOR
PAL BG	YES	MDLK6D915A
PAL I	NO	MDLK6B776A
PAL BG SEC DK	YES	MDLK6E917B

0101	N15
0151	B32
1500	J32
1501	H29
1601	K13
1602	N29
1603	B13
2000	J19
2001	D 4
2002	C 4
2003	C 4
2004	C 5
2005	D 5
2009	D 6
2010	E 6
2011	E 6
2012	K 5
2013	K 6
2014	K 7
2015	L 3
2017	K 1
2018	M 4
2019	M 1
2020	M 1
2021	N25
2023	N26
2024	N27
2025	N 8
2026	D16
2027	G18
2028	O10
2029	O11
2032	M 8
2033	G19
2034	L 8
2035	M10
2038	L 1
2039	K 7
2040	K 8
2041	K 8
2042	K 9
2043	K10
2045	K11
2046	K12
2047	K12
2048	K12
2050	L14
2052	D10
2055	D11
2056	D12
2057	E13
2058	E14
2059	E13
2061	B12
2063	C14
2064	B16
2065	B17
2066	C16
2067	D16
2068	B18
2069	B19
2070	D19
2071	B19
2072	B20
2079	F17
2080	G18
2082	K20
2083	K20
2084	K21
2085	K21
2086	N19
2087	C17
2088	D 7
2090	I20
2095	M 3
2096	M 3
2097	K 6
2098	D 8
2099	D10
2100	B 7
2101	G17
2106	G18
2107	B 4
2211	D19
2300	L23
2301	L24
2302	K23
2303	L25
2304	J25
2305	J24
2500	E28
2503	E31
2504	G31
2505	I31
2506	F31
2507	B29
2508	N31
3001	C 3
3008	E14
3010	E 5
3011	E13
3017	G 2
3018	G 2
3019	I 3
3020	J 3
3021	J 6
3022	K 6
3023	K 7
3025	M 6
3026	L 1
3027	D16
3028	K 1
3029	M 4
3030	E 6
3031	N 5
3033	L 3
3034	L 2
3036	M 2
3037	M 1
3038	L 1
3039	K 1
3040	M 4
3041	N29
3043	N10
3044	O10
3045	O11
3046	O11
3051	K11
3052	K12
3054	K 2
3055	F14
3062	B12
3063	B14
3064	D13
3065	B15
3066	B16
3067	B17
3068	C16
3069	C16
3070	C18
3071	B18
3072	C18
3073	C19
3075	C19
3076	B20
3077	C19
3078	B19
3085	K22
3086	K19
3087	N20
3088	N19
3089	G19
3090	G17
3091	F18
3092	G18
3093	F17
3094	G16
3096	I16
3097	I16
3099	I17
3100	I17
3104	I18
3105	J19
3106	K19
3109	C18
3111	D15
3112	D15
3114	J 3
3116	F 2
3117	E 5
3119	B 8
3121	N22
3128	G15
3132	F17
3135	K13
3136	K14
3137	D 5
3300	L23
3301	L24
3302	L24
3303	L25
3304	J25
3305	K24
3306	K24
3307	K24
3308	J23
3309	I23
3310	J24
3311	J24
3500	H31
3501	I30
3502	G29
3504	G31
3505	E28
3506	F31
3507	D31
3508	D31
3509	C30
3510	C30
3511	C29
3512	C28
3513	C25
3514	B26
3515	B31
3516	N30
3517	N25
3520	F28
3521	N31
3902	H29
3905	K13
5002	D 4
5003	D 5
5004	C 5
5005	B 7
5006	B12
5008	B19
5009	D19
5010	B17
5011	B17
5012	D17
5013	C16
5014	L14
5015	N11
5016	N10
5017	K 2
5021	N26
5022	N27
5023	G18
5024	G19
5025	L 3
5501	M30
6001	K10
6002	J 2
6004	M 4
6501	B31
6502	E31
6504	E30
6506	F31
6507	G31
6508	N24
6509	B29
6510	D31
7000	M28
7001	A11
7006	M 3
7007	L 4
7016	C13
7017	C16
7018	C17
7019	C18
7020	D19
7025	G16
7026	G17
7029	J19
7030	J19
7031	N12
7032	N10
7036	B15
7037	B 3
7038	M13
7051	G 4
7053	M 7
7053	N 7
7053	N 5
7053	N 4
7301	J25
7500	M31
7501	D31
7502	C29
7504	M 8
7505	M19
7506	H30
7551	C27
7551	E27
7551	A27

OSCILLOGRAMS VIDEOSIGNALPROCESSING, IN/OUT - VS/IO

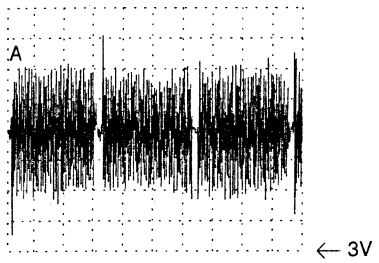
UNLESS OTHERWISE INDICATED MEASURED IN POSITION RECORD

A: AC, 0.2 V/Div , 2 us/Div



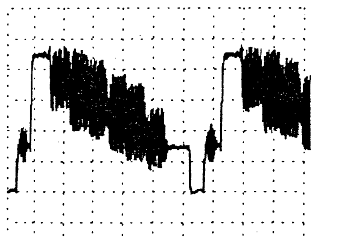
IC 7051 Pin 40 Osc. 11

A: AC, 50 mV/Div , 20 us/Div



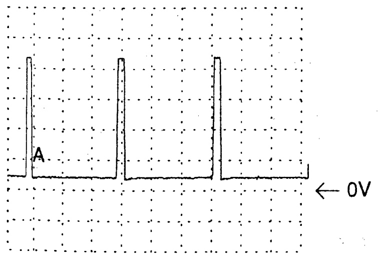
IC 7051 Pin 39 Osc. 12
(measured in playback)

A: DC, 0.5 V/Div 10 us/Div



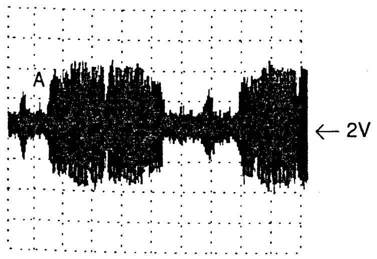
IC 7051 Pin 34 Osc.13
VSB (measured in playback)

A: DC, 1.0 V/Div , 20 us/Div



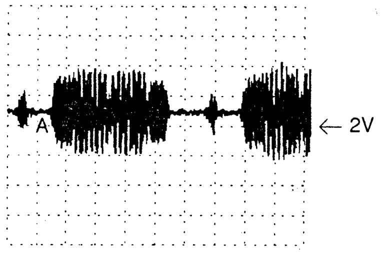
IC 7051 Pin 32 Osc. 14

A: AC, 50 mV/Div , 5 ms/Div



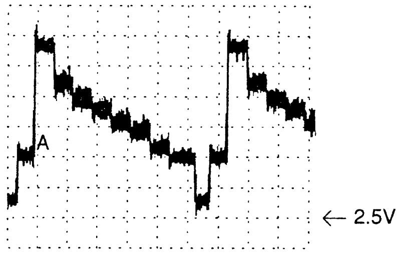
IC 7051 Pin 27 Osc. 15
(measured in playback)

A: DC, 0.5 V/Div , 10 us/Div



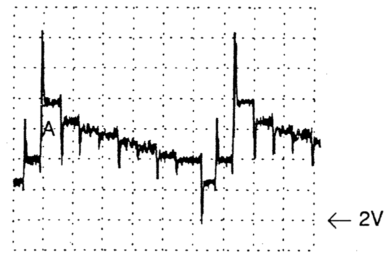
IC 7051 Pin 25 Osc. 16
(measured in playback)

A: AC, 0.1 V/Div , 10 us/Div



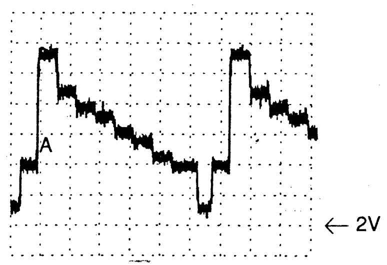
IC 7051 Pin 3 Osc. 17
(measured in playback)

A: DC, 0.2 V/Div , 10 us/Div



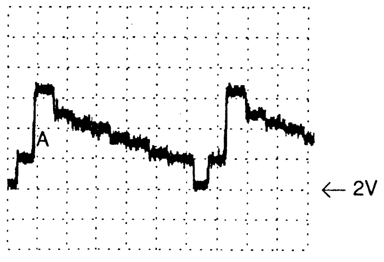
IC 7051 Pin 5 Osc.1 8

A: AC, 0.1 V/Div , 10 us/Div



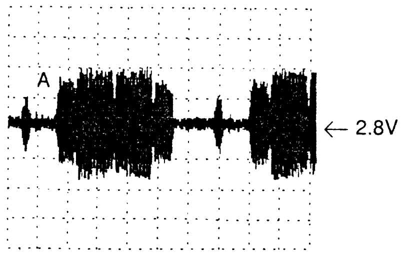
IC 7051 Pin 10 Osc.19
(measured in playback)

A: AC, 0.1 V/Div , 10 us/Div



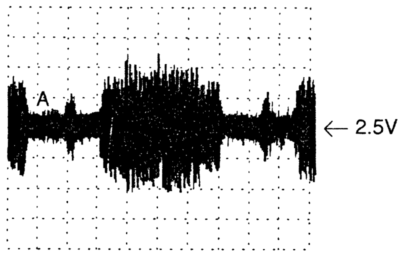
IC 7051 Pin 12 Osc. 20
(measured in playback)

A: AC, 0.1 V/Div , 10 us/Div



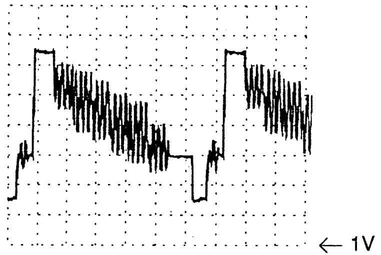
IC 7051 Pin 15 Osc. 21

A: AC, 0.2 V/Div , 10 us/Div



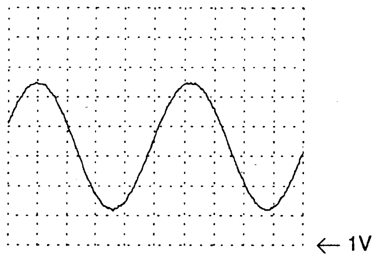
IC 7051 Pin 15 Osc. 21
(measured in playback)

A: DC, 0.2 V/Div 10 us/Div



IC 7551 Pin 4 Osc. 22
VSB

A: DC, 0.2 V/Div 0.2 ms/Div



IC 7551 Pin 15 Osc. 23
AMLR

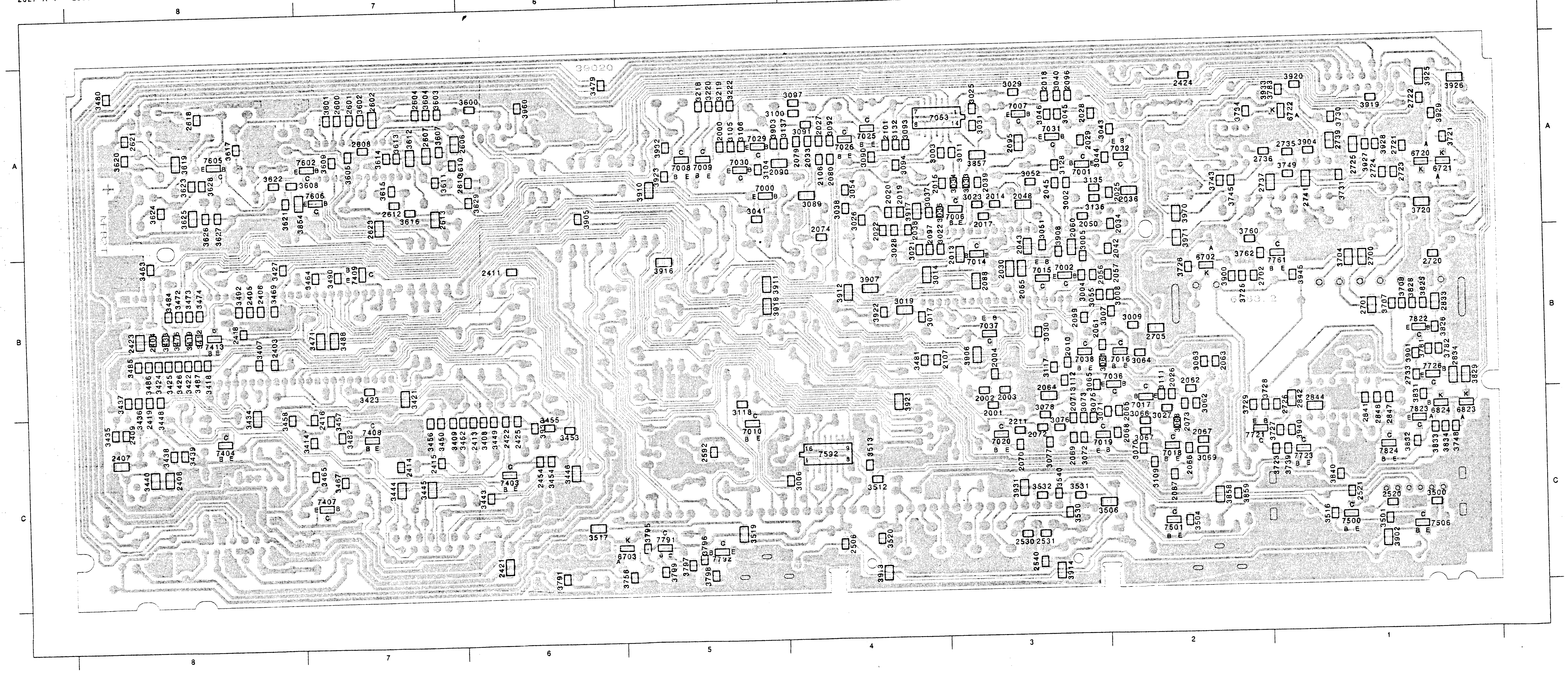
REMARKS :

FAMILY BOARD N3 N5

"INSERTED COMPONENTS ARE DEPENDENT ON THE SET TYPE"

2000 A 5	2028 A 3	2061 B 3	2088 B 3	2411 B 6	2531 C 3	2701 B 1	2834 B 1	3019 B 4	3041 A 5	3069 C 2	3104 A 5	3407 B 8
2001 C 3	2029 A 3	2062 B 2	2090 A 5	2413 C 6	2540 C 3	2702 B 2	2841 C 1	3021 B 4	3043 A 2	3070 C 2	3105 A 5	3408 C 6
2002 B 3	2030 B 3	2063 B 2	2095 A 3	2414 C 7	2592 C 5	2705 B 2	2842 C 1	3022 B 4	3044 A 2	3071 C 2	3106 A 5	3409 C 7
2003 B 3	2033 A 4	2064 B 3	2096 A 3	2415 C 7	2600 A 7	2720 B 1	2844 C 1	3023 A 3	3045 A 3	3072 C 3	3109 C 2	3412 B 8
2004 B 3	2034 A 2	2065 C 2	2097 B 4	2416 C 7	2601 A 7	2721 A 1	2847 C 1	3025 A 3	3046 A 3	3073 C 3	3111 C 2	3414 C 7
2010 B 3	2036 A 2	2066 C 2	2099 B 3	2418 B 8	2602 A 7	2722 A 1	2848 C 1	3026 A 4	3051 B 3	3075 C 3	3112 B 3	3418 B 8
2013 B 3	2038 A 4	2067 C 2	2101 A 4	2419 B 8	2604 A 7	2723 A 1	3002 A 3	3027 C 2	3052 A 3	3076 C 3	3117 B 3	3419 B 8
2014 A 3	2039 A 3	2068 C 2	2106 A 4	2421 C 6	2606 A 7	2724 A 1	3003 A 4	3028 A 4	3054 A 4	3077 C 3	3118 C 5	3421 B 7
2015 A 4	2042 B 2	2069 C 3	2107 B 4	2422 C 6	2607 A 7	2725 A 1	3004 B 3	3029 A 3	3055 B 3	3078 C 3	3128 A 3	3422 B 8
2017 A 3	2043 B 3	2070 C 3	2211 C 3	2423 B 8	2608 A 7	2726 C 1	3005 B 3	3030 B 3	3061 B 3	3089 A 4	3132 A 4	3423 B 7
2018 A 3	2045 A 3	2071 C 3	2403 B 8	2424 A 2	2610 A 6	2733 B 1	3006 C 4	3031 A 3	3062 C 2	3090 A 4	3135 A 3	3424 B 8
2019 A 4	2048 A 3	2072 C 3	2404 B 8	2425 C 6	2612 A 7	2735 A 1	3007 B 2	3033 A 3	3063 B 2	3091 A 4	3136 A 3	3425 B 8
2020 A 4	2050 A 3	2073 C 2	2405 B 8	2454 C 6	2613 A 7	2736 A 2	3008 B 2	3034 A 3	3064 B 2	3092 A 4	3137 A 4	3426 B 8
2022 A 4	2055 B 3	2074 A 4	2406 B 8	2506 C 4	2618 A 8	2737 A 1	3009 B 2	3036 A 4	3065 B 3	3093 A 4	3218 A 5	3427 B 8
2025 A 2	2056 B 3	2079 A 4	2407 C 8	2520 C 1	2621 A 8	2739 A 1	3011 A 3	3037 A 4	3066 C 2	3094 A 4	3219 A 5	3433 B 8
2026 C 2	2057 B 2	2080 A 4	2408 C 8	2521 C 1	2623 A 7	2741 A 1	3014 B 4	3038 A 4	3067 C 2	3097 A 4	3220 A 5	3434 C 8
2027 A 4	2060 B 3	2087 C 2	2409 C 8	2530 C 3	2700 B 1	2833 B 1	3017 B 4	3040 A 3	3068 C 2	3100 A 4	3222 A 5	3435 C 8

3436 B 8	3457 C 7	3485 B 8	3531 C 3	3615 A 7	3720 A 1	3760 B 2	3833 C 1	3911 B 5	3930 C 6	7001 A 3	7030 A 5	7602 A 7
3437 B 8	3458 C 8	3486 B 8	3532 C 3	3616 A 7	3721 A 1	3762 B 2	3834 C 1	3912 B 4	3931 C 3	7002 B 3	7031 A 3	7605 A 8
3438 C 8	3463 B 8	3487 B 8	3540 C 3	3617 A 8	3723 C 1	3781 B 1	3840 C 1	3913 C 4	3932 A 5	7006 A 3	7032 A 2	7606 A 7
3439 C 8	3464 B 7	3488 B 7	3600 A 6	3619 A 8	3725 B 2	3782 B 1	3854 A 7	3914 C 3	3933 A 1	7007 A 3	7036 B 2	7721 C 2
3440 C 8	3465 C 7	3490 B 7	3601 A 7	3620 A 8	3726 B 2	3783 A 1	3857 A 3	3916 B 5	3940 C 1	7008 A 5	7037 B 3	7723 C 1
3443 C 6	3467 C 7	3492 B 8	3602 A 7	3621 A 8	3727 C 1	3791 C 6	3858 C 2	3917 A 4	3945 B 1	7009 A 5	7038 B 3	7726 B 1
3444 C 7	3469 B 8	3500 C 1	3603 A 7	3622 A 8	3728 C 2	3795 C 5	3859 C 2	3918 B 5	3960 A 6	7010 C 5	7053 A 4	7761 B 1
3445 C 7	3471 B 7	3501 C 1	3604 A 7	3623 A 8	3729 C 2	3796 C 5	3900 B 2	3919 A 1	3970 A 2	7014 B 3	7403 C 6	7791 C 5
3446 C 6	3472 B 8	3504 C 2	3605 A 7	3624 A 8	3730 A 1	3797 C 5	3901 B 1	3920 A 1	3971 B 2	7015 B 3	7404 C 8	7792 C 5
3448 B 8	3473 B 8	3506 C 3	3607 A 7	3625 A 8	3731 A 1	3798 C 5	3902 C 1	3921 C 4	6702 B 2	7016 B 2	7407 C 7	7822 B 1
3449 C 6	3474 B 8	3512 C 4	3608 A 8	3626 A 8	3734 A 2	3799 C 5	3903 A 5	3922 B 4	6703 C 5	7017 C 2	7408 C 7	7823 C 1
3450 C 7	3476 B 8	3513 C 4	3609 A 7	3627 A 8	3739 C 1	3825 B 1	3904 A 1	3923 A 5	6720 A 1	7018 C 2	7409 B 7	7824 C 1
3452 C 7	3479 A 6	3516 C 1	3610 A 7	3628 A 8	3743 A 2	3826 B 1	3905 A 6	3925 A 1	6721 A 1	7019 C 3	7413 B 8	
3453 C 6	3480 A 8	3517 C 6	3611 A 7	3629 A 6	3745 A 2	3828 B 1	3906 B 3	3926 A 1	6722 A 1	7020 C 3	7500 C 1	
3454 C 6	3481 B 4	3519 C 5	3612 A 7	3704 B 1	3748 C 1	3829 B 1	3907 B 4	3927 A 1	6823 C 1	7025 A 4	7501 C 2	
3455 C 6	3482 C 7	3520 C 4	3613 A 7	3707 B 1	3749 A 1	3831 C 1	3908 B 3	3928 A 1	6824 C 1	7026 A 4	7506 C 1	
3456 C 7	3484 B 8	3530 C 3	3614 A 7	3708 B 1	3756 C 5	3832 C 1	3910 A 5	3929 A 1	7000 A 5	7029 A 5	7592 C 4	



FAMILY BOARD N3 N5

"INSERTED COMPONENTS ARE DEPENDENT ON THE SET TYPE"

1101	B	6
1400	C	7
1401	B	8
1402	C	8
1500	C	1
1501	C	1
1591	C	3
1601	A	3
1602	C	5
1603	B	2
1701	B	1
1720	A	1
1721	A	1
1740	A	2
1745	A	2
1821	C	1
1911	C	4
1912	A	1
1913	C	7
1914	C	8
1915	C	8
1916	C	8
1917	C	3
1918	A	6
1919	A	6
1920	C	7
2009	B	4
2011	B	3
2012	A	3
2021	B	4
2023	C	5
2024	B	3
2032	A	2
2035	B	2
2040	B	4
2041	A	3
2046	A	3
2047	A	3
2052	B	3
2053	B	3
2058	B	2
2059	B	2
2402	B	8
2410	C	6
2412	C	6
2417	C	7
2420	C	7
2507	C	4
2605	A	8
2609	A	7
2611	A	7
2614	A	8
2615	A	7
2616	A	8
2617	A	8
2619	A	8
2620	A	8
2622	A	6
2624	A	7
2703	B	2
2704	A	1
2727	A	2
2728	C	2
2738	A	1
2740	A	2
2790	C	5
2791	C	5
2840	B	1
2843	C	1
2845	C	1
2846	C	1
3001	B	3
3010	B	3
3018	B	4
3020	B	4
3039	A	4
3095	A	5
3096	A	4
3098	A	5
3099	A	5
3116	B	5
3119	B	5
3410	C	8
3411	C	8
3413	A	8
3415	A	5
3416	B	7
3417	B	7
3420	B	7
3428	C	6
3429	C	5
3430	B	6
3431	B	6
3432	B	6
3441	C	8
3442	C	8
3447	C	6
3451	C	6
3459	B	8
3460	B	6
3461	A	2
3462	A	2
3466	C	7
3468	C	7
3475	C	7
3477	C	6
3478	B	7
3483	C	5
3489	C	7
3491	B	7
3493	C	6
3502	C	4
3503	C	3
3505	C	2
3596	C	5
3606	A	6
3618	A	8
3702	A	1
3703	A	1
3705	B	1
3737	B	2
3741	A	1
3742	A	1
3761	A	2
3790	C	6
3792	C	6
5002	C	3
5003	C	3
5004	B	3
5005	B	3
5006	C	2
5007	B	4
5008	C	3
5009	C	3
5010	C	2
5011	C	2
5012	C	2
5013	C	2
5014	A	2
5015	A	3
5016	A	3
5017	B	4
5018	C	2
5021	B	4
5022	B	4
5023	A	4
5024	A	4
5025	A	3
5401	C	8
5402	C	8
5403	A	6
5404	A	6
5501	C	1
5601	A	7
5602	A	6
5603	A	8
5604	A	8
5700	B	1
5701	C	2
5720	B	1
5721	A	1
5724	A	1
5725	A	1
5726	A	2
5727	A	1
5728	A	2
5740	A	2
6001	A	3
6002	A	4
6004	A	3
6005	B	5
6006	B	5
6401	B	7
6402	C	6
6503	C	2
6504	C	3
6508	C	4
6520	C	4
6522	C	4
6530	C	3
6531	C	3
6540	C	3
6790	C	5
6791	C	5
7051	B	3
7402	C	8
7406	C	7
7410	B	8
7411	C	6
7412	A	2
7504	A	2
7601	A	7
7603	A	8
7604	A	8
7607	A	8
7720	A	1
7790	C	6
7793	C	6
7840	C	1
9001	C	8
9002	B	8
9003	B	5
9004	C	8
9005	C	7
9006	C	8
9007	B	8
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9018	B	8
9019	B	7
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9027	B	7
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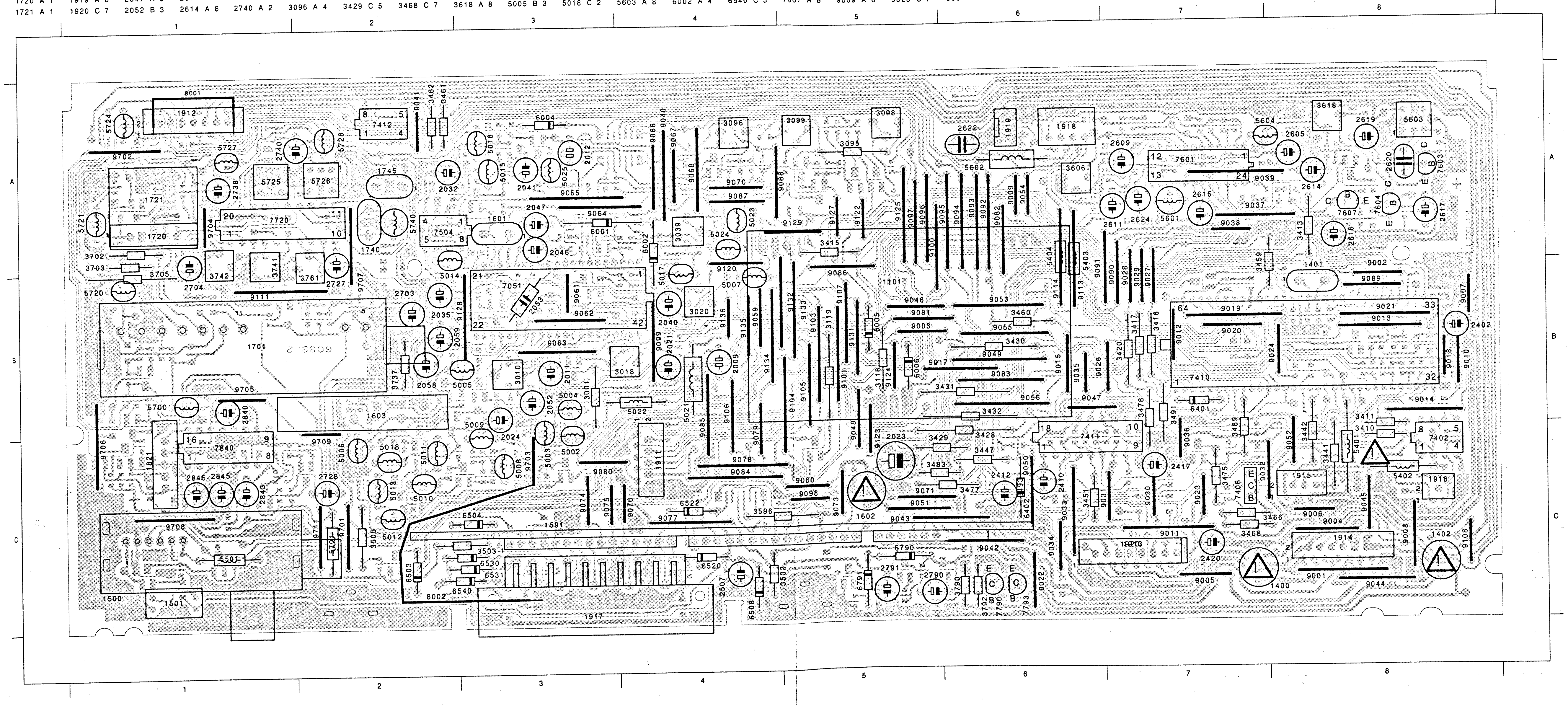
9029	B	7
9030	C	7
9031	C	7
9032	C	7
9033	C	6
9034	C	6
9035	B	6
9036	C	7
9037	A	7
9038	A	7
9039	A	7
9040	A	4
9041	A	2
9042	C	6
9043	C	6
9044	C	8
9045	C	8
9046	B	5
9047	B	6
9048	B	5
9049	B	6
9050	C	6
9051	C	5
9052	C	8
9053	B	6
9054	A	6
9055	B	6
9056	B	6
9059	B	4
9060	C	5
9061	B	3
9062	B	3
9063	B	3
9064	A	3
9065	A	3
9066	A	4
9067	A	4
9068	A	4
9070	A	4
9071	C	5
9073	C	5
9074	C	3
9075	C	3
9076	C	4
9077	C	4
9078	C	4
9079	B	4
9080	C	3
9081	B	5
9082	A	6
9083	B	6
9084	C	4
9085	B	4
9086	B	5
9087	A	4
9088	A	4
9089	B	8
9090	B	7
9091	B	7
9092	A	6
9093	A	6
9094	A	6
9095	A	6
9096	A	5
9097	A	5
9098	C	5
9099	B	4
9100	A	5
9101	B	5
9103	B	5
9104	B	5
9105	B	5
9106	B	4
9107	B	5
9108	C	8
9111	B	1
9113	A	6
9114	A	6
9120	A	4
9122	A	5
9123	C	5
9124	B	5
9125	A	5
9127	A	5
9128	B	3
9129	A	5
9131	B	5
9132	B	5
9133	B	5
9134	B	4
9135	B	4
9136	B	4
9701	C	2
9702	A	1
9703	C	3
9704	A	1
9705	B	1
9706	C	1
9707	A	2
9708	C	1
9709	B	2
9711	C	2

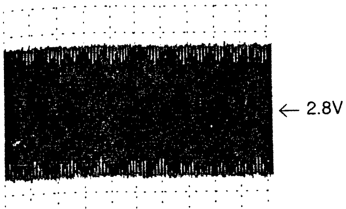


531

OSCILLOGRAMS VIDEOSIGNALPROCESSING -VS

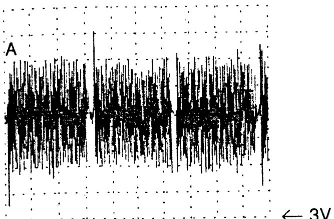
Unless otherwise indicated measured in position record.

A: AC, 0.2 V/Div , 2 us/Div



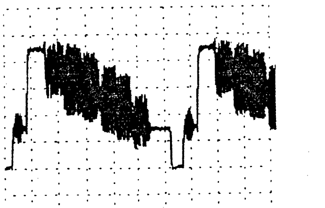
IC 7051 Pin 40 Osc.11

A: AC, 50 mV/Div , 20 us/Div



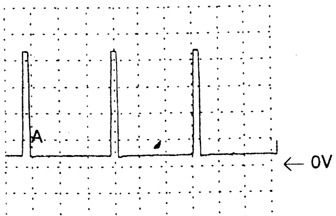
IC 7051 Pin 39 Osc.12
(measured in playback)

A: DC, 0.5 V/Div 10 us/Div



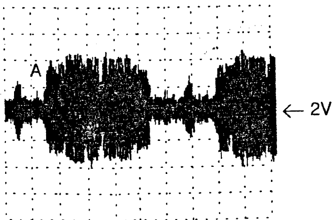
IC 7051 Pin 3 Osc.13
VSB(meas. in playback)

A: DC, 1.0 V/Div , 20 us/Div



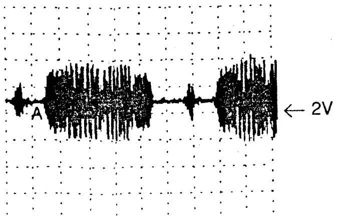
IC 7051 Pin 32 Osc.14

A: AC, 50 mV/Div , 5 ms/Div



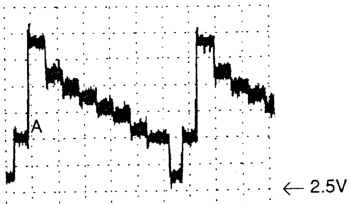
IC 7051 Pin 27 Osc.15
(measured in playback)

A: DC, 0.5 V/Div , 10 us/Div



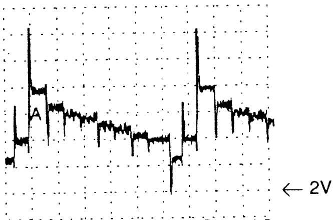
IC 7051 Pin 25 Osc.16
(measured in playback)

A: AC, 0.1 V/Div , 10 us/Div



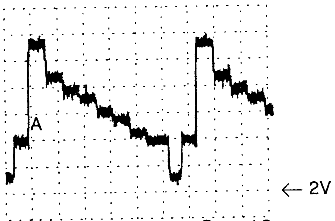
IC 7501 Pin 3 Osc.17

A: DC, 0.2 V/Div , 10 us/Div



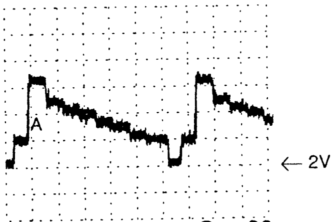
IC 7051 Pin 5 Osc.18

A: AC, 0.1 V/Div , 10 us/Div



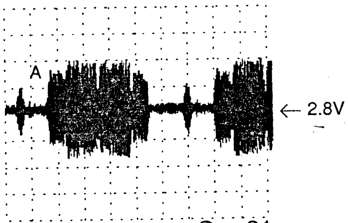
IC 7051 Pin 10 Osc.19
(measured in playback)

A: AC, 0.1 V/Div , 10 us/Div



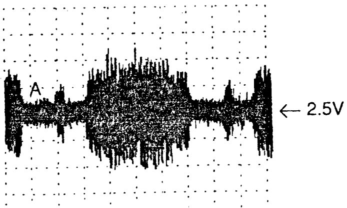
IC 7051 Pin 12 Osc.20
(measured in playback)

A: AC, 0.1 V/Div , 10 us/Div



IC 7051 Pin 15 Osc.21

A: AC, 0.2 V/Div , 10 us/Div

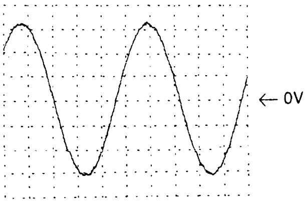


IC 7051 Pin 15 Osc.21
(measured in playback)

OSCILLOGRAMS AUDIO LINEAR -AL

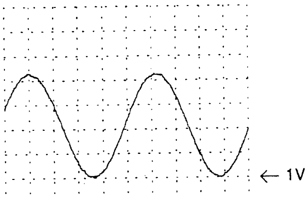
Unless otherwise indicated measured in position record.

A: DC, 0.2 V/Div, 0.2 ms/Div



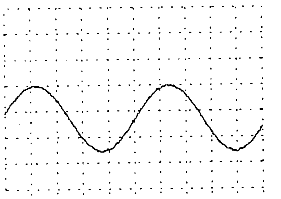
Capacitor 2611 Osc.31
AMLP

A: DC, 0.2 V/Div, 0.2 ms/Div



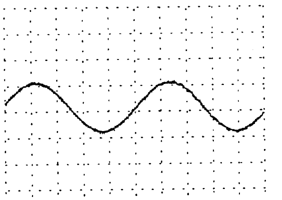
Resistor 3611 Osc.32
AMLR

A: DC, 0.5 V/Div, 0.2 ms/Div



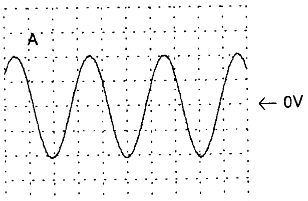
IC 7601 Pin 13 Osc.33

A: DC, 1 V/Div, 0.2 ms/Div



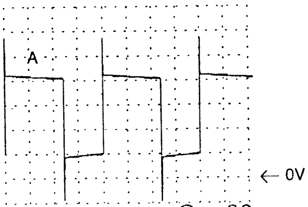
IC 7601 Pin 17 Osc.34

A: DC, 0.1 V/Div, 5 us/Div



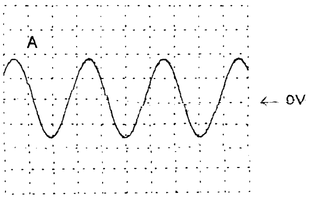
Connector F7,2 Osc.35
Main erase head (MEH1)

A: DC, 1 V/Div, 10 ms/Div



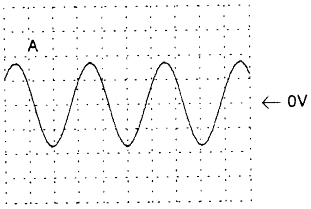
Connector F8,1 Osc.36
CTL1

A: DC, 20 V/Div, 5 us/Div



Connector F8,3 Osc.37
Audio erase head (AEH1)

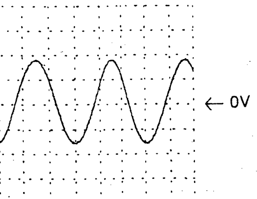
A: DC, 10 V/Div, 5 us/Div



Connector F8,7 Osc.38
Audio R/P Head (ARH)

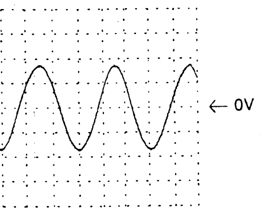
in position record.

20 V/Div, 5 us/Div



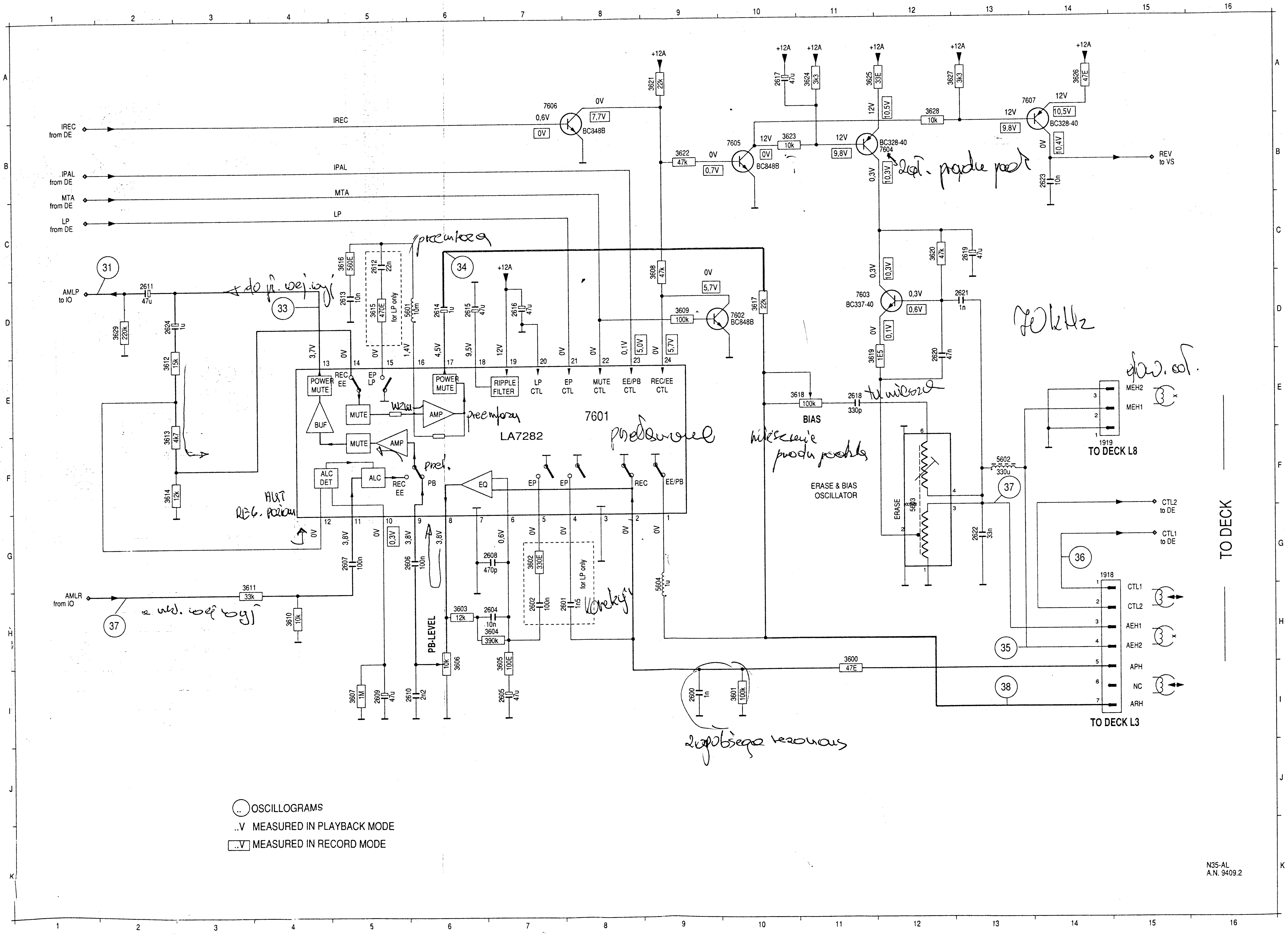
ctor F8,3 Osc.37
erase head (AEH1)

10 V/Div, 5 us/Div



ector F8,7 Osc.38
R/P Head (ARH)

FAMILY BOARD AUDIO LINEAR - AL N3 N5



I Ozió
IREC from DE
IPAL from DE
MTA from DE
LP from DE
AMLP to IO
AMLR from IO
IREC
IPAL
MTA
LP
+12A
7606 BC848B
7605 BC848B
7604 BC328-40
7607 BC328-40
7602 BC848B
7603 BC337-40
REV to VS
POWER MUTE
BUF
MUTE
AMP
ALC DET
ALC
REC EE
EP LP
RIPPLE FILTER
LP CTL
EP CTL
MUTE CTL
EE/PB CTL
REC/EE CTL
EQ
PB
REC
EE/PB
7601
LA7282
BIAS
ERASE & BIAS OSCILLATOR
ERASE
for LP only
PB-LEVEL
MEH2
MEH1
1919 TO DECK L8
CTL2 to DE
CTL1 to DE
1918
CTL1
CTL2
AEH1
AEH2
APH
NC
ARH
TO DECK L3
TO DECK
przemkowa
do pł. wej. bagi
przemkowa
przełącznik
ALC REG. poziom
podłowowe
2-gł. prądu post
70kHz
zwiększenie prądu pola
tu większe
glow. sol.
korekcji
z wł. wej. bagi
zapobiega rezonans
N35-AL
A.N. 9409.2

○ OSCILLOGRAMS

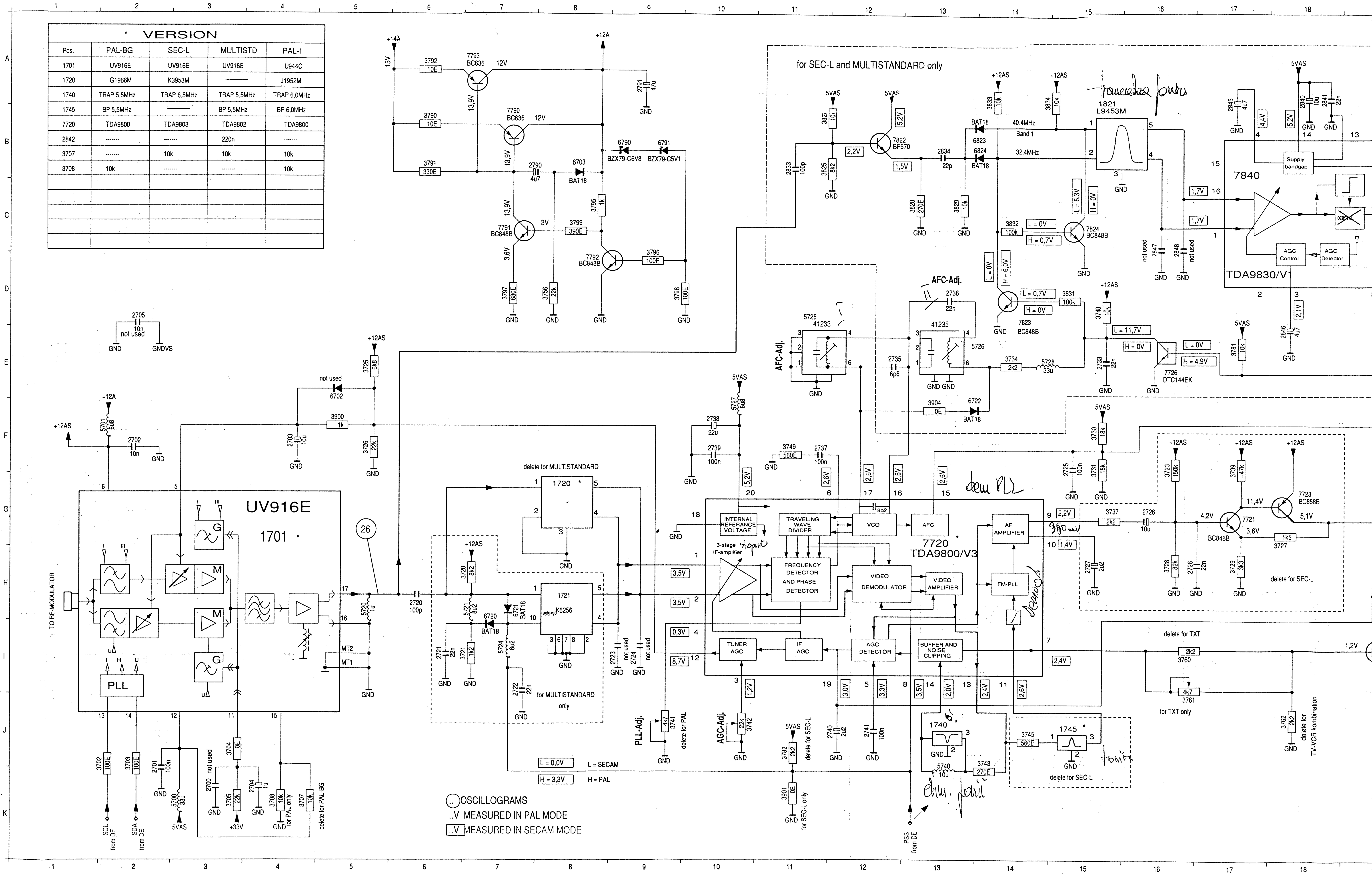
..V MEASURED IN PLAYBACK MODE

☐..V MEASURED IN RECORD MODE

1918	G14
1919	F14
2600	I 9
2601	H 7
2602	H 7
2604	H 7
2605	I 7
2606	G 5
2607	G 5
2608	G 7
2609	I 5
2610	I 5
2611	D 2
2612	C 5
2613	D 5
2614	D 6
2615	D 6
2616	D 7
2617	A10
2618	E11
2619	C13
2620	E12
2621	D13
2622	G13
2623	B14
2624	D 2
3600	H11
3601	I10
3602	G 7
3603	H 6
3604	H 7
3605	H 7
3606	H 6
3607	I 5
3608	C 9
3609	D 9
3610	H 4
3611	G 3
3612	E 2
3613	F 2
3614	F 2
3615	D 5
3616	C 5
3617	D10
3618	E10
3619	E11
3620	C12
3621	A 9
3622	B 9
3623	B10
3624	A11
3625	A11
3626	A14
3627	A13
3628	A12
3629	D 2
3960	I13
5601	D 6
5602	F13
5603	G12
5604	G 9
7601	E 8
7602	D10
7603	D11
7604	B12
7605	B10
7606	A 7
7607	A13

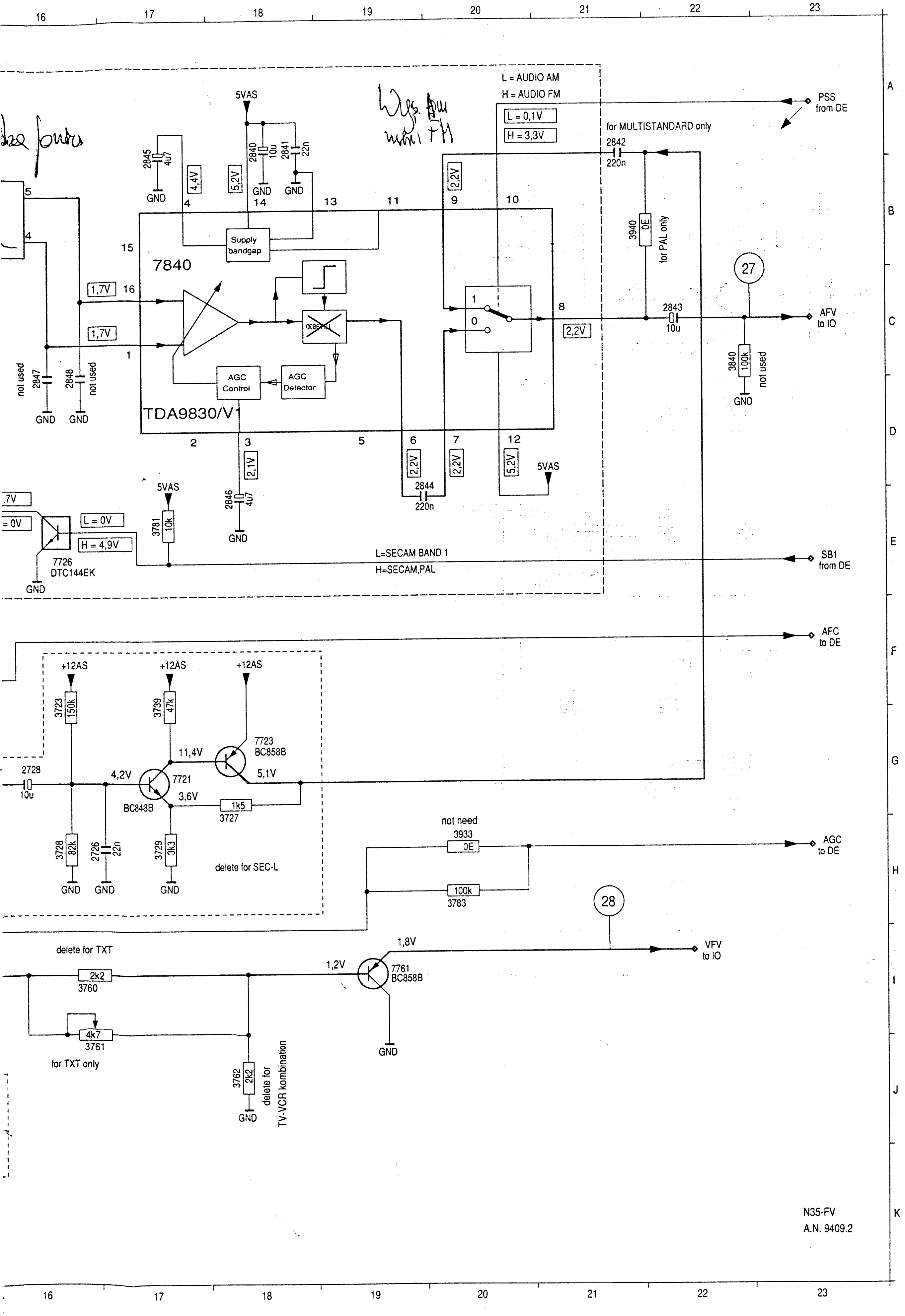
FAMILY BOARD FRONT END - FV **N3** **N5**

* VERSION				
Pos.	PAL-BG	SEC-L	MULTISTD	PAL-I
1701	UV916E	UV916E	UV916E	U944C
1720	G1966M	K3953M	———	J1952M
1740	TRAP 5,5MHz	TRAP 6,5MHz	TRAP 5,5MHz	TRAP 6,0MHz
1745	BP 5,5MHz	———	BP 5,5MHz	BP 6,0MHz
7720	TDA9800	TDA9803	TDA9802	TDA9800
2842	-------	-------	220n	-------
3707	-------	10k	10k	10k
3708	10k	-------	-------	10k



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
A B C D E F G H I J K
UV916E
1701 *
TO RF-MODULATOR
PLL
MT1
MT2
SCL from DE
SDA from DE
5VAS
+33V
3702 100E
3703 100E
2701 100n
5700 33u
2700 not used
3704 0E
3705 22k
2704 1u
3706 10k for PAL only
3707 10k delete for PAL-BG
+12AS
+12A
5701 6u8
2702 10n
2705 10n not used
GND
GNDVS
3725 6k8
6702 not used
3900 1k
2703 10u
3726 22k
26
5720 1u
2720 100p
+14A
15V
3792 10E
7793 BC636
12V
3790 10E
7790 BC636
13,9V
3791 330E
2790 4u7
6703 BAT18
2791 47u
6790 BZX79-C6V8
6791 BZX79-C5V1
3795 1k
7791 BC848B
3V
3,6V
3799 390E
7792 BC848B
3796 100E
3797 680E
3756 22k
3798 100E
delete for MULTISTANDARD
1720 *
1721 K6256
3720 8k2
5721 8u2
6720 BAT18
6721 BAT18
3721 1k2
2721 22n
5724 8u2
2722 22n
for MULTISTANDARD only
2723 not used
2724 not used
L = 0,0V L = SECAM
H = 3,3V H = PAL
5VAS
5727 6u8
2738 22u
2739 100n
3749 560E
2737 100n
3,5V
0,3V
8,7V
5,2V
2,6V
INTERNAL REFERANCE VOLTAGE
3-stage IF-amplifier
TRAVELING WAVE DIVIDER
VCO
AFC
8p2
FREQUENCY DETECTOR AND PHASE DETECTOR
VIDEO DEMODULATOR
VIDEO AMPLIFIER
AF AMPLIFIER
FM-PLL
TUNER AGC
IF AGC
AGC DETECTOR
BUFFER AND NOISE CLIPPING
7720 *
TDA9800/V3
2,2V
1,4V
2,4V
3,0V
3,3V
2,0V
1,2V
PLL-Adj.
3741 4k7
delete for PAL
AGC-Adj.
3742 22k
2740 2u2
2741 100n
3782 2k2
delete for SEC-L
3901 0E
for SEC-L only
PSS from DE
1740 *
5740 10u
3743 270E
3745 560E
1745 *
delete for SEC-L
for SEC-L and MULTISTANDARD only
2833 100p
3824 10k
3825 8k2
7822 BF570
1,5V
2834 22p
3828 270E
3829 10k
3833 10k
3834 10k
BAT18
6823
6824
40.4MHz Band 1
32.4MHz
1821 L9453M
L = 6,3V
H = 0V
3832 100k
L = 0V
H = 0,7V
7824 BC848B
L = 0V
H = 6,0V
L = 0,7V
H = 0V
3831 100k
7823 BC848B
AFC-Adj.
2736 22n
5725 41233
41235
5726
2735 6p8
3734 2k2
5728 33u
3904 0E
6722 BAT18
3748 10k
L = 11,7V
H = 0V
2733 22n
7726 DTC144EK
L = 0V
H = 4,9V
3781 10k
3730 18k
3731 18k
2725 100n
2845 4u7
4,4V
2840 10u
2841 22n
5,2V
Supply bandgap
7840
TDA9830/V1
1,7V
AGC Control
AGC Detector
2847 not used
2848 not used
2846 4u7
2,1V
2727 2u2
3737 2k2
2728 10u
4,2V
3723 150k
3728 82k
2726 22n
3739 47k
7721 BC843B
11,4V
3,6V
7723 BC858B
5,1V
3727 1k5
3729 3k3
delete for SEC-L
delete for TXT
3760 2k2
3761 4k7
for TXT only
3762 2k2
delete for TV-VCR kombination
1,2V

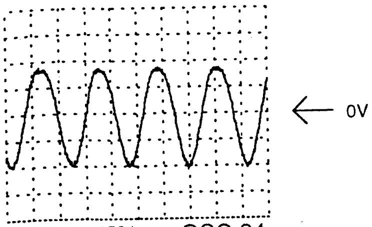
OSCILLOGRAMS
..V MEASURED IN PAL MODE
..V MEASURED IN SECAM MODE


16
17
18
19
20
21
22
23
A
B
C
D
E
F
G
H
I
J
K
L = AUDIO AM
H = AUDIO FM
L = 0,1V
H = 3,3V
PSS
from DE
for MULTISTANDARD only
2842
220n
5VAS
2845
4u7
2840
10u
2841
22n
4,4V
5,2V
2,2V
GND
4
14
13
11
9
10
5
15
16
1
2
3
6
7
8
12
Supply
bandgap
7840
1,7V
AGC
Control
AGC
Detector
TDA9830/V1
3940
0E
for PAL only
27
2843
10u
AFV
to IO
2,2V
3840
100k
not used
2847
2848
2,1V
2846
4u7
2844
220n
5,2V
3781
10k
7726
DTC144EK
L = 0V
H = 4,9V
L=SECAM BAND 1
H=SECAM,PAL
SB1
from DE
AFC
to DE
+12AS
3723
150k
3739
47k
7723
BC858B
11,4V
5,1V
2728
10u
4,2V
7721
BC848B
3,6V
1k5
3727
3728
82k
2726
22n
3729
3k3
delete for SEC-L
not need
3933
0E
100k
3783
AGC
to DE
28
delete for TXT
2k2
3760
1,2V
1,8V
7761
BC858B
VFV
to IO
4k7
3761
for TXT only
3762
2k2
delete for
TV-VCR kombination
GND
N35-FV
A.N. 9409.2

1701	G 4
1720	G 8
1721	H 8
1740	J13
1745	J15
1821	B15
2700	K 3
2701	K 2
2702	F 2
2703	F 4
2704	K 4
2705	D 2
2720	H 6
2721	I 6
2722	I 7
2723	I 9
2724	I 9
2725	F15
2726	H16
2727	H15
2728	G16
2733	E15
2735	E12
2736	D13
2737	F11
2738	F10
2739	F10
2740	J12
2741	J12
2790	B 7
2791	A 9
2833	B11
2834	B13
2840	A18
2841	A18
2842	A21
2843	C22
2844	E19
2845	A17
2846	E18
2847	C16
2848	C16
3702	J 2
3703	J 2
3704	J 3
3705	K 3
3707	K 4
3708	K 4
3720	H 7
3721	I 7
3723	F16
3725	E 5
3726	F 5
3727	H18
3728	H16
3729	H17
3730	F15
3731	F15
3734	E14
3737	G15
3739	F17
3741	J 9
3742	J10
3743	J14
3745	J14
3748	D15
3749	F11
3756	D 8
3760	I16
3761	J16
3762	J18
3781	E17
3782	J11
3783	H20
3790	B 6
3791	B 6
3792	A 6
3795	C 8
3796	D 9
3797	D 7
3798	D 9
3799	C 8
3825	B11
3826	B11
3828	C13
3829	C13
3831	D15
3832	C14
3833	A14
3834	A14
3840	C22
3900	F 5
3901	K11
3904	F13
3920	G20
3933	H20
3940	B21
5700	K 3
5701	F 2
5720	H 5
5721	H 7
5724	I 7
5725	D11
5726	E13
5727	F10
5728	E14
5740	K13
6702	F 5
6703	B 8
6720	I 7
6721	H 7
6722	F13
6790	B 9
6791	B 9
6823	B14
6824	B14
7720	H13
7721	G17
7723	G18
7726	E16
7761	I19
7790	B 7
7791	C 7
7792	D 8
7793	A 7
7822	B12
7823	E14
7824	C15
7840	C17

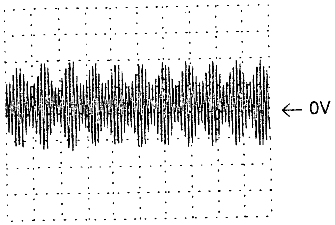
OSCILLOGRAMS FRONT END IN/OUT

A: AC, 20mV/Div, 100ns/Div



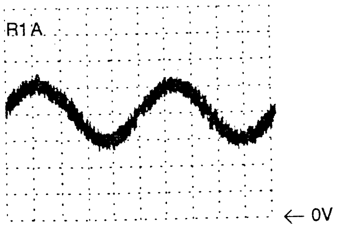
Connector 1591 OSC.24
FSC

A: DC, 0.1 V/Div 0.2 us/Div



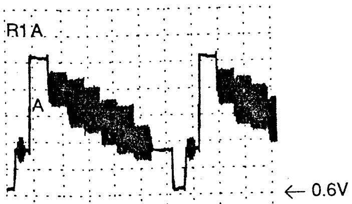
Tuner 1720 Pin 17 OSC.26

A: DC, 0.5 V/Div 0.2 ms/Div



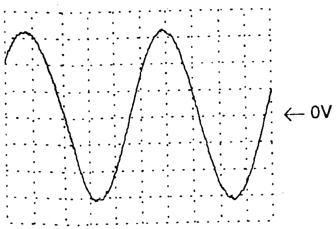
IC 7702 Pin 9 OSC.27
AFV

A: DC, 0.2 V/Div 10 us/Div



Transistor 7705-Emitter OSC.28
VFV

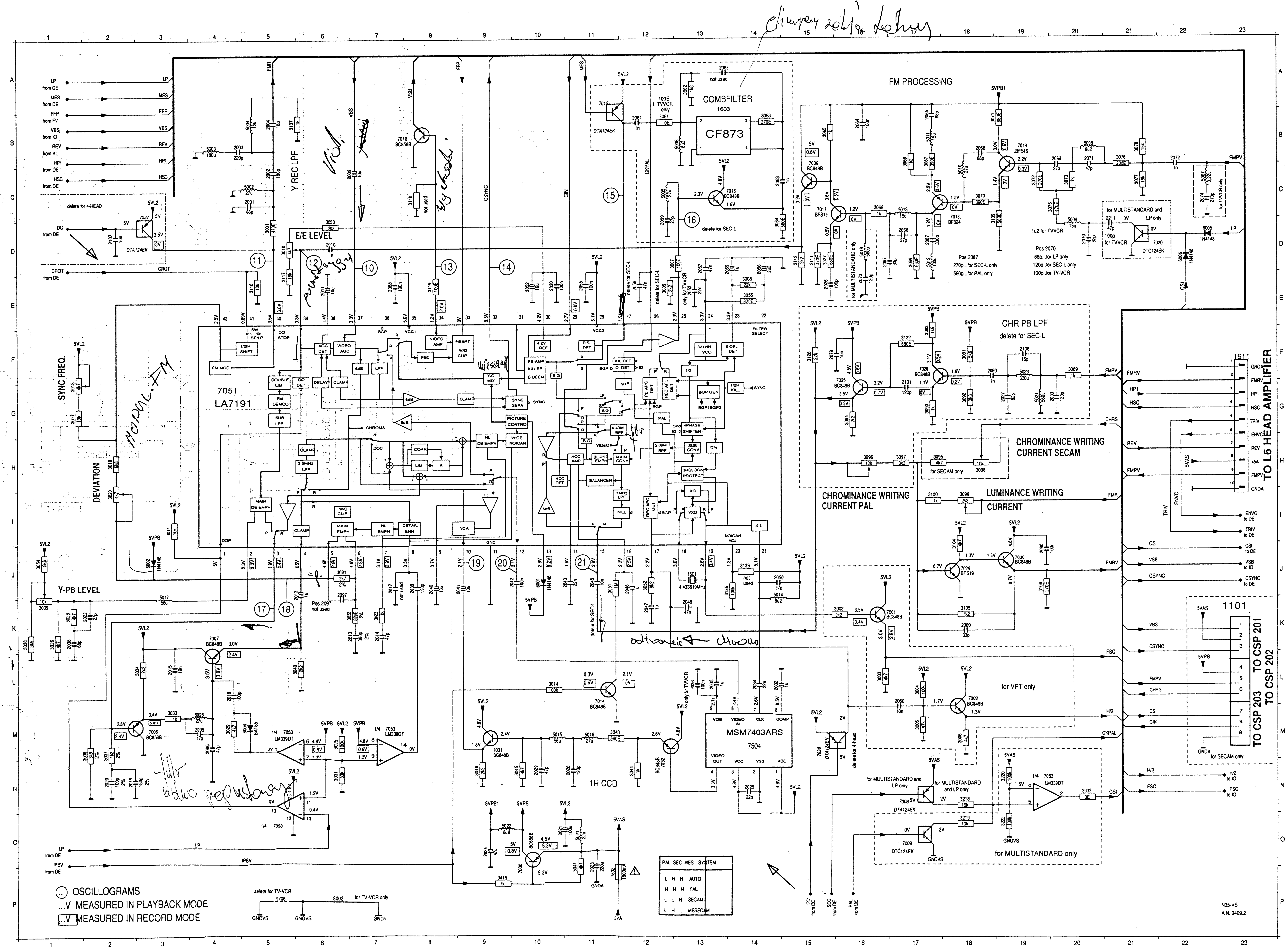
A: DC, 0.2 V/Div, 0.2 ms/Div



Capacitor 2611 OSC.31
AMLP

REMARKS :

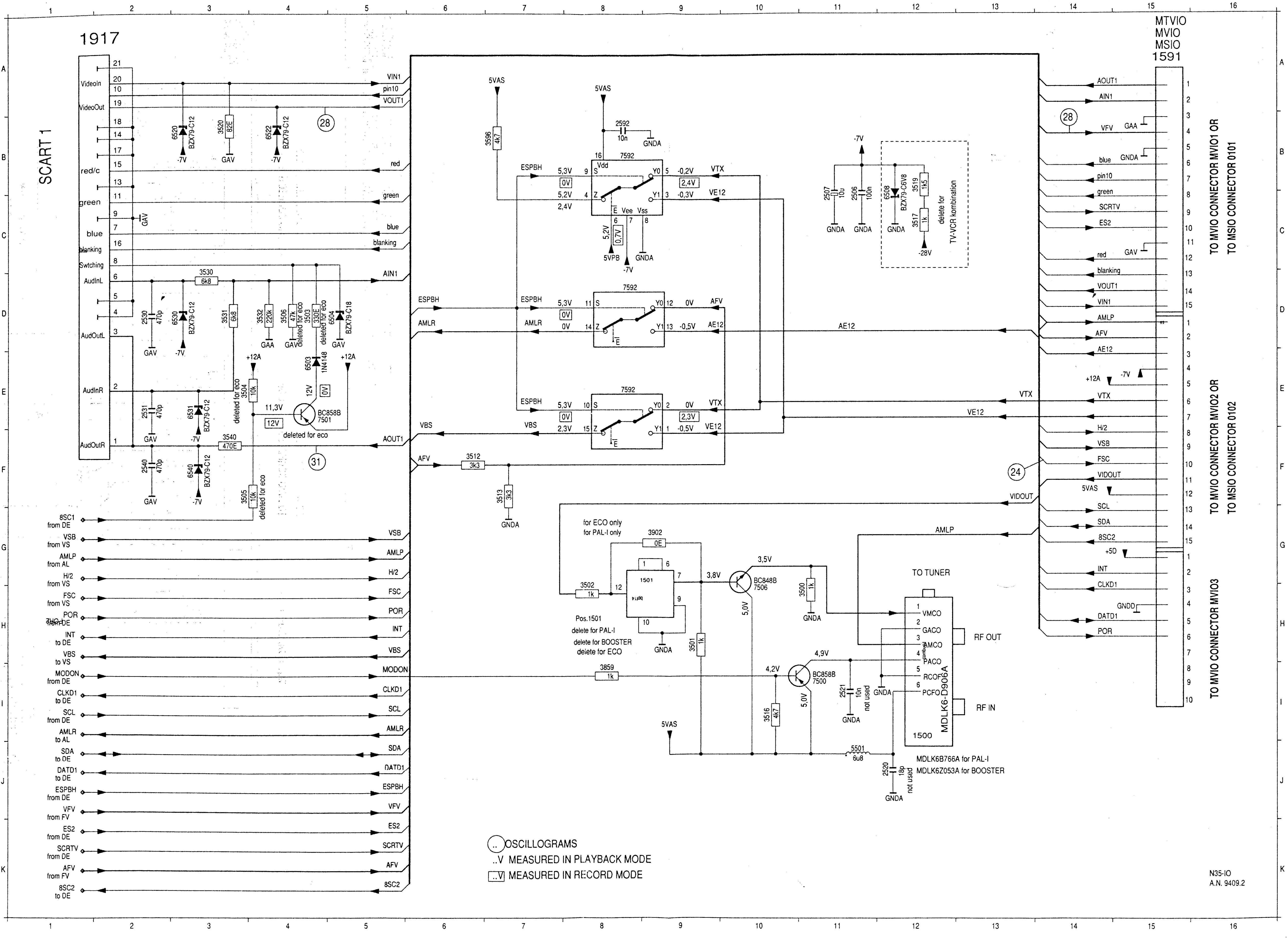
FAMILY BOARD VIDEOSIGNALPROCESSING - VS N3 N5


FM PROCESSING
COMBFILTER
1603
CF873
Y REC LPF
E/E LEVEL
7051
LA7191
SYNC FREQ.
DEVIATION
Y-PB LEVEL
CHR PB LPF
delete for SEC-L
CHROMINANCE WRITING CURRENT SECAM
CHROMINANCE WRITING CURRENT PAL
LUMINANCE WRITING CURRENT
for VPT only
for MULTISTANDARD only
MSM7403ARS
7504
1H CCD
TO L6 HEAD AMPLIFIER
1911
1101
TO CSP 201
TO CSP 202
TO CSP 203
LP from DE
MES from DE
FFP from FV
VBS from IO
REV from AL
HP1 from DE
HSC from DE
DO from DE
CROT from DE
LP from DE
IPBV from DE
delete for 4-HEAD
delete for TV-VCR
for TV-VCR only
N35-VS
A.N. 9409.2
OSCILLOGRAMS
...V MEASURED IN PLAYBACK MODE
...V MEASURED IN RECORD MODE

PAL	SEC	MES	SYSTEM
L	H	H	AUTO
H	H	H	PAL
L	L	H	SECAM
L	H	L	MESECAM

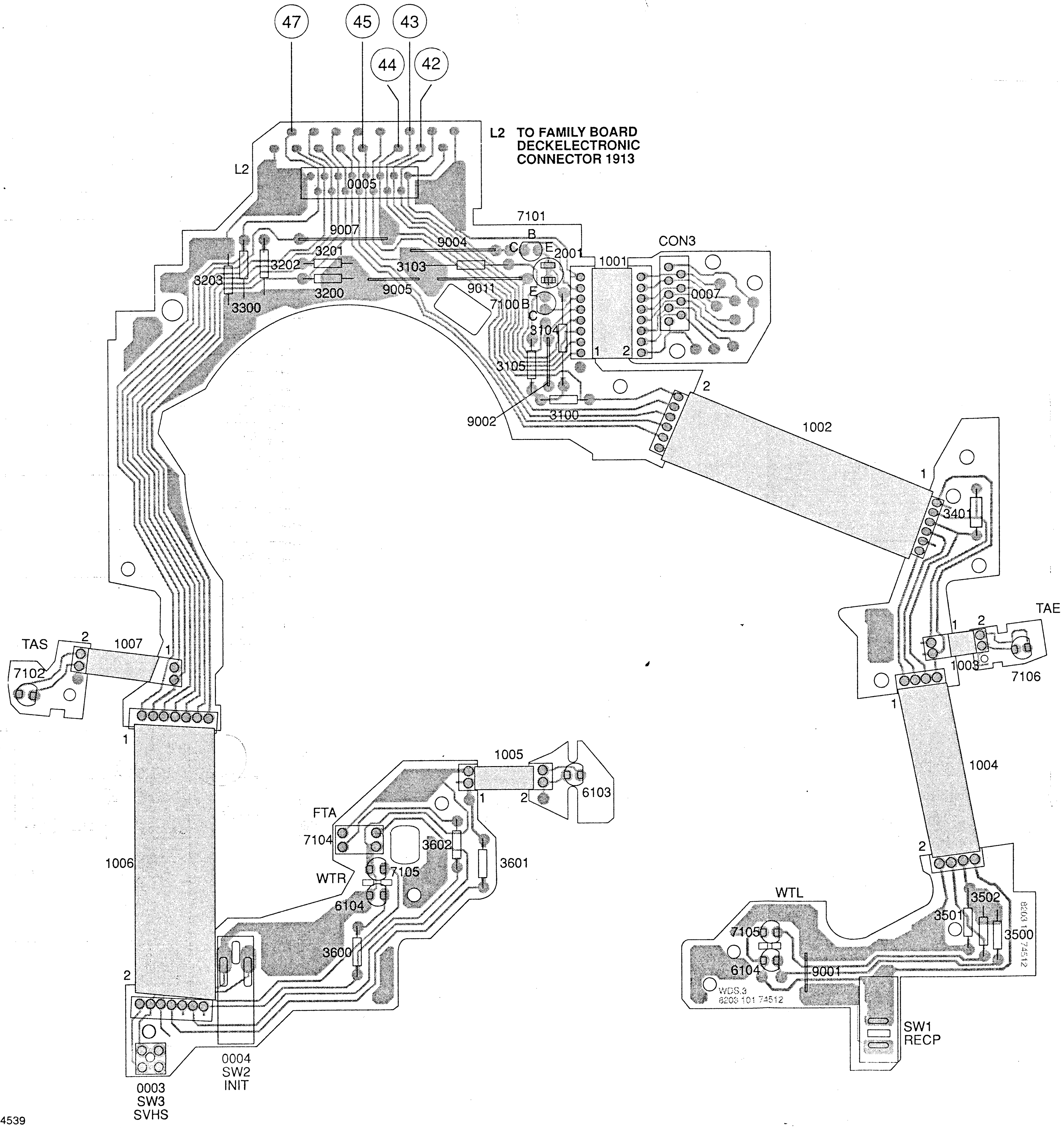
1101	K23	3078	B21
1601	J13	3089	F20
1602	P11	3090	G17
1603	A14	3091	F18
1911	F23	3092	G18
2000	K18	3093	F17
2001	C 5	3094	G16
2002	C 5	3095	H17
2003	B 4	3096	H16
2004	B 5	3097	H17
2009	C 7	3098	H18
2010	D 6	3099	I18
2011	E 6	3100	I17
2012	J 6	3104	J18
2013	K 7	3105	K18
2014	K 7	3106	J19
2015	L 3	3109	D18
2017	J 7	3111	D15
2018	L 4	3112	D15
2019	N 2	3116	E 5
2020	N 2	3117	E 5
2021	O10	3118	C 8
2022	K 2	3119	E 8
2023	P11	3128	F15
2024	O 9	3132	F17
2025	N14	3135	J13
2026	E15	3136	J14
2027	G19	3137	B 5
2028	N11	3218	N18
2029	N10	3219	O18
2030	E10	3220	N19
2032	L14	3222	O19
2033	G20	3415	P 9
2034	L14	3932	N20
2035	L13	5002	C 5
2036	L13	5003	B 4
2038	K 1	5004	B 5
2039	J 8	5005	C12
2040	J 8	5006	B13
2041	J 9	5007	C22
2042	J10	5008	B20
2043	J11	5009	D20
2045	J11	5010	C18
2046	J12	5011	B17
2047	K12	5012	D17
2048	K13	5013	C17
2050	J14	5014	J14
2052	E10	5015	M10
2053	E13	5016	M11
2055	E11	5017	J 3
2056	E12	5018	D16
2057	D13	5021	O11
2058	D14	5022	O 9
2059	D14	5023	F19
2060	L17	5024	G19
2061	B12	5025	M 4
2062	A13	6001	J10
2063	C14	6002	J 3
2064	B16	6004	M 5
2065	B17	6005	D22
2066	D17	6006	D22
2067	D16	7000	P10
2068	B18	7001	K16
2069	B20	7002	L18
2070	D20	7006	M 3
2071	B20	7007	K 4
2072	B22	7008	N17
2073	E16	7009	O17
2074	C22	7010	B 8
2079	F15	7014	L11
2080	F18	7015	A11
2087	D17	7016	C13
2088	E 7	7017	C15
2090	J19	7018	D18
2095	M 4	7019	B19
2096	M 4	7020	D22
2097	J 6	7025	G16
2099	D12	7026	F17
2101	G17	7029	J18
2106	F19	7030	J19
2107	D 2	7031	M 9
2211	D21	7032	N12
3001	D 5	7036	C15
3002	K16	7037	C 3
3003	L16	7038	M15
3004	L17	7051	G 4
3005	M17	7053	N19
3006	M18	7053	M 5
3007	D12	7053	M 7
3008	E14	7053	O 5
3009	E12	7504	M14
3010	D 5	9706	P 5
3011	I 3		
3014	L10		
3017	G 1		
3018	G 1		
3019	H 2		
3020	I 2		
3021	J 6		
3022	K 6		
3023	K 7		
3025	M 6		
3026	K 1		
3027	D15		
3028	K 1		
3029	M 4		
3030	D 6		
3031	N 6		
3033	M 3		
3034	L 3		
3036	M 2		
3037	M 2		
3038	K 1		
3039	K 1		
3040	L 5		
3041	P11		
3043	M11		
3044	N12		
3045	N10		
3046	N 9		
3051	J11		
3052	J12		
3054	J 1		
3055	E14		
3061	B12		
3062	A13		
3063	B14		
3064	D14		
3065	B15		
3066	B17		
3067	B17		
3068	C16		
3069	D17		
3070	C18		
3071	B18		
3072	C19		
3073	C20		
3075	C20		
3076	B21		
3077	C21		

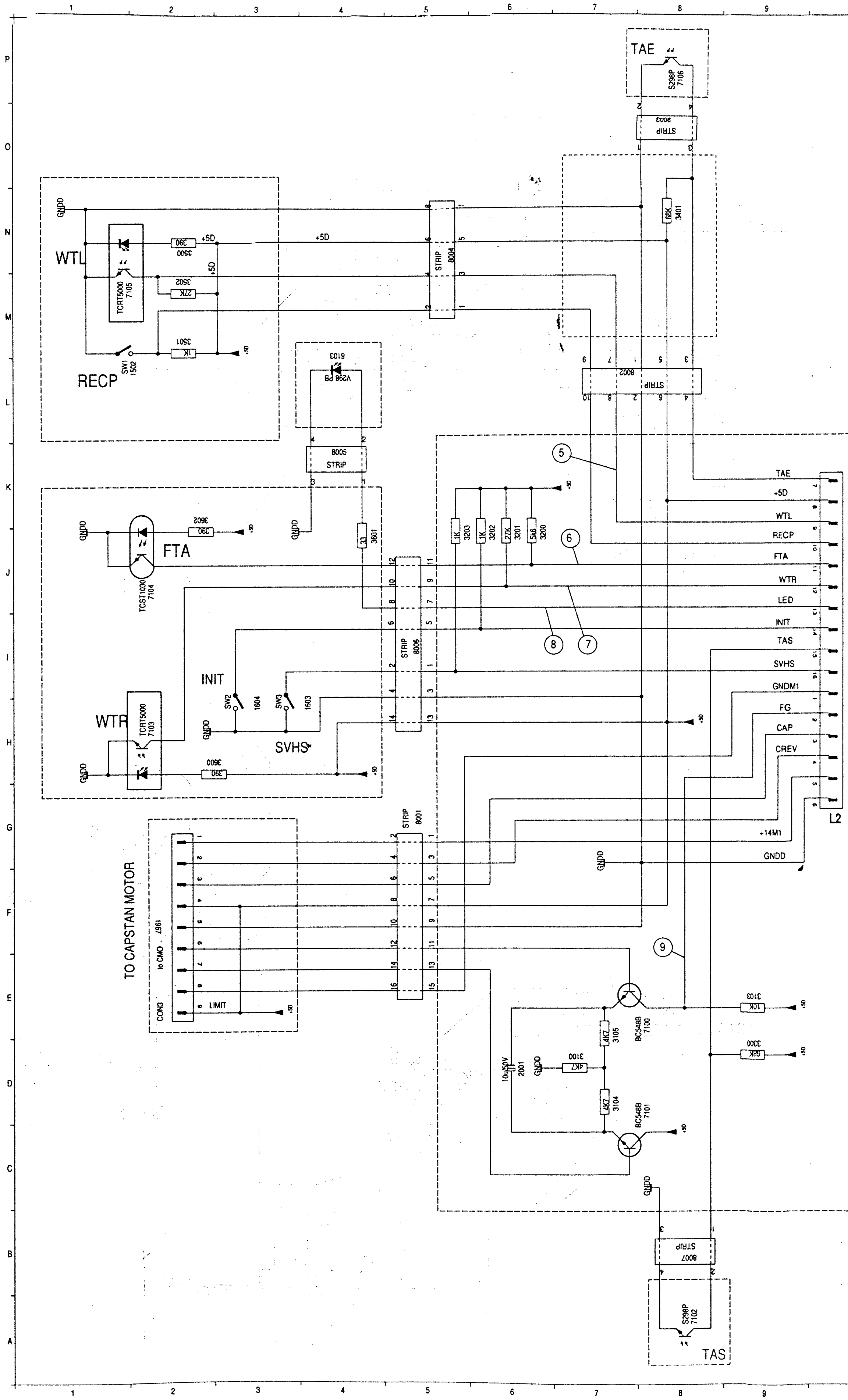
FAMILY BOARD IN/OUT - I/O N3 N5


1917
SCART 1
VideoIn
VideoOut
red/c
green
blue
blanking
Swtching
AudInL
AudOutL
AudInR
AudOutR
21
20
10
19
18
14
17
15
13
11
9
7
16
8
6
5
4
3
2
1
VIN1
pin10
VOUT1
red
green
blue
blanking
AIN1
AOUT1
6520 BZX79-C12
3520 82E
6522 BZX79-C12
-7V
GAV
28
3530 6k8
2530 470p
6530 BZX79-C12
3531 6k8
3532 220k
3506 47k deleted for eco
3503 330E deleted for eco
6504 BZX79-C18
GAA
6503 1N4148
+12A
3504 10k deleted for eco
12V
0V
11,3V
12V
BC858B 7501
deleted for eco
2531 470p
6531 BZX79-C12
3540 470E
2540 470p
6540 BZX79-C12
31
3505 10k deleted for eco
8SC1 from DE
VSB from VS
AMLP from AL
H/2 from VS
FSC from VS
POR from DE
INT to DE
VBS to VS
MODON from DE
CLKD1 to DE
SCL from DE
AMLR to AL
SDA to DE
DATD1 to DE
ESPBH from DE
VFV from FV
ES2 from DE
SCRTV from DE
AFV from FV
8SC2 to DE
VSB
AMLP
H/2
FSC
POR
INT
VBS
MODON
CLKD1
SCL
AMLR
SDA
DATD1
ESPBH
VFV
ES2
SCRTV
AFV
8SC2
5VAS
3596 4k7
2592 10n
GNDA
7592
Vdd
ESPBH
5,3V
0V
5,2V
2,4V
-0,2V
2,4V
-0,3V
VTX
VE12
Vee Vss
5,2V
0,7V
5VPB
-7V
AFV
AMLR
AE12
-0,5V
2,3V
VBS
3512 3k3
3513 3k3
-7V
2507 10u
2506 100n
6508 BZX79-C6V8
3519 1k5
3517 1k
-28V
delete for TV-VCR kombination
24
VIDOUT
AMLP
for ECO only
for PAL-I only
3902 0E
3502 1k
1501
Pos.1501 delete for PAL-I
delete for BOOSTER
delete for ECO
3501 1k
3,8V
3,5V
BC848B 7506
5,0V
3500 1k
3859 1k
4,2V
4,9V
BC858B 7500
3516 4k7
2521 10n not used
5501 6u8
2520 18p not used
TO TUNER
VMCO
GACO
AMCO
FACO
RCOF
PCFO
RF OUT
RF IN
1500
MDLK6-D906A
MDLK6B766A for PAL-I
MDLK6Z053A for BOOSTER
MTVIO
MVIO
MSIO
1591
AOUT1
AIN1
VFV
GAA
blue
GNDA
pin10
green
SCRTV
ES2
red
GAV
blanking
VOUT1
VIN1
AMLP
AFV
AE12
+12A
-7V
VTX
VE12
H/2
VSB
FSC
VIDOUT
5VAS
SCL
SDA
8SC2
+5D
INT
CLKD1
GNDD
DATD1
POR
TO MVIO CONNECTOR MVIO1 OR TO MSIO CONNECTOR 0101
TO MVIO CONNECTOR MVIO2 OR TO MSIO CONNECTOR 0102
TO MVIO CONNECTOR MVIO3
OSCILLOGRAMS
..V MEASURED IN PLAYBACK MODE
..V MEASURED IN RECORD MODE
N35-IO
A.N. 9409.2

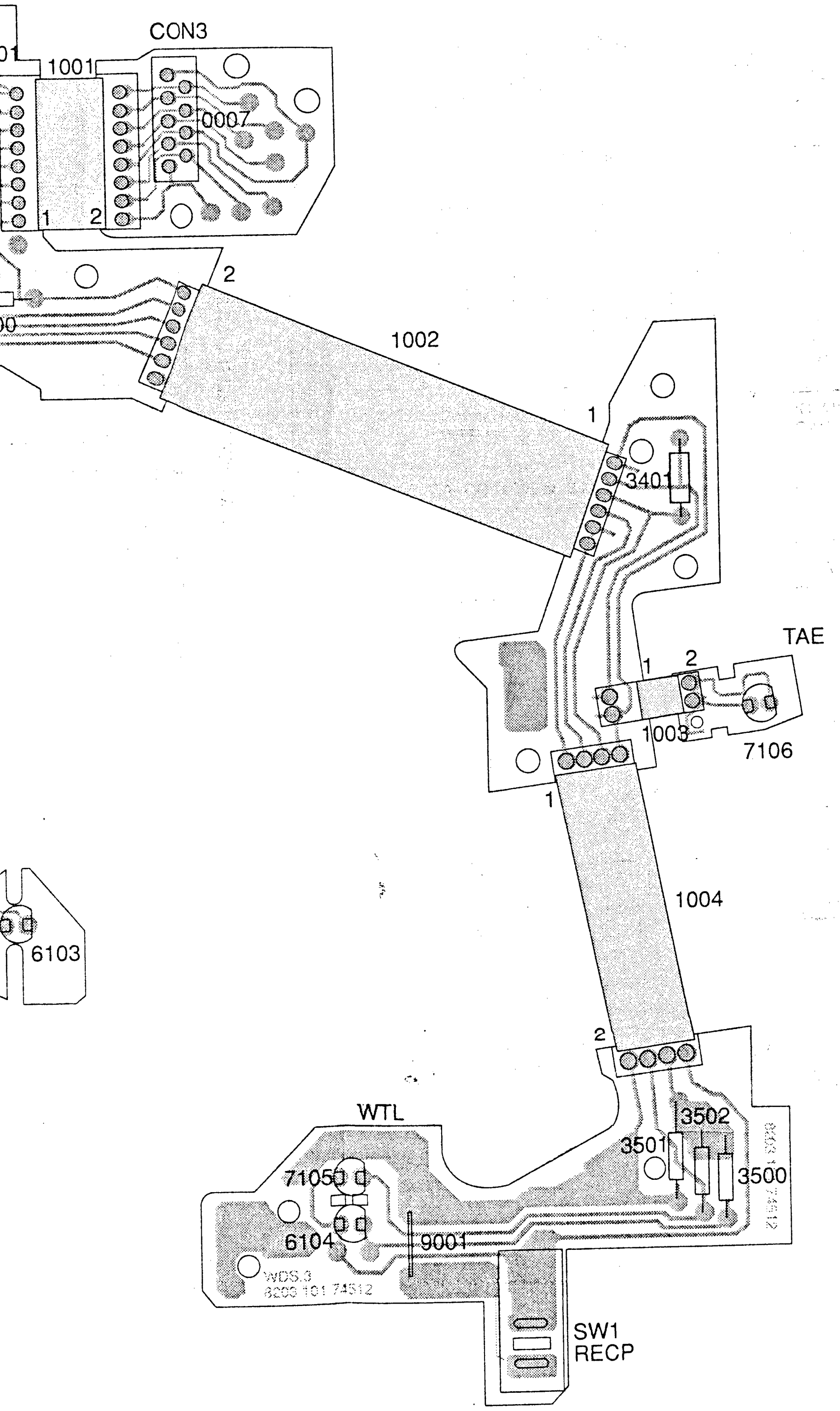
1500	I12
1501	G 8
1591	A15
1917	A 1
2506	C11
2507	C11
2520	J12
2521	I11
2530	D 2
2531	E 2
2540	F 2
2592	B 8
3500	H11
3501	H 9
3502	H 8
3503	D 4
3504	E 3
3505	F 3
3506	D 4
3512	F 6
3513	F 7
3516	I10
3517	C12
3519	B12
3520	B 3
3530	D 3
3531	D 3
3532	D 4
3540	F 3
3596	B 7
3859	I 8
3902	G 9
5501	J11
6503	E 4
6504	D 5
6508	C12
6520	B 3
6522	B 4
6530	D 3
6531	E 3
6540	F 3
7500	I11
7501	E 4
7506	G10
7592	B 8
7592	D 8
7592	E 8

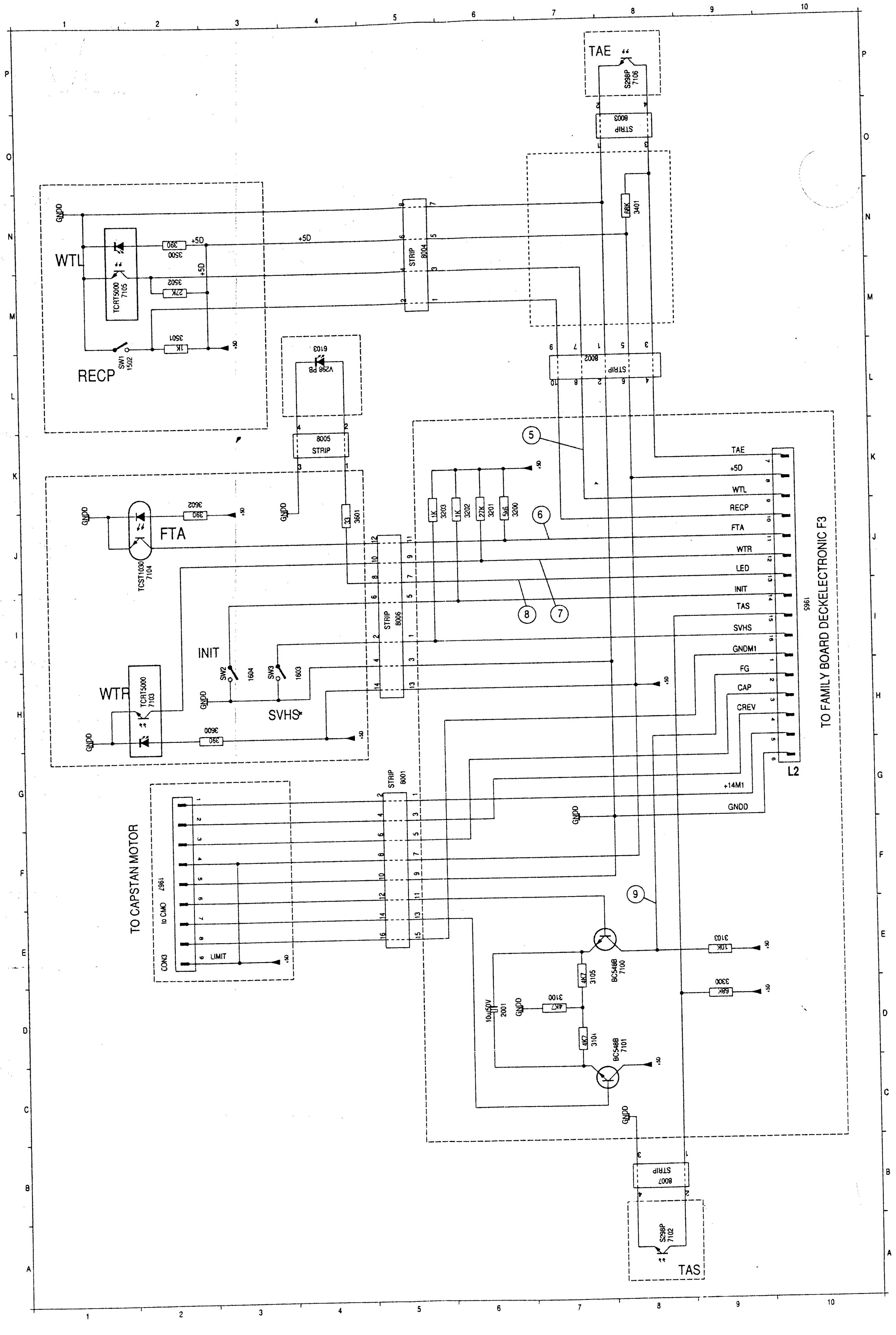
TAPE DECK SENSOR BOARD


47
45
43
44
42
L2 TO FAMILY BOARD DECKELECTRONIC CONNECTOR 1913
L2
0005
7101
9007
9004
B
C
E
2001
1001
CON3
3203
3202
3201
3103
3200
9005
9011
7100
B
E
C
0007
3300
3104
3105
1
2
9002
3100
2
1002
1
3401
TAE
TAS
2
1007
1
7102
1
2
1003
7106
1
1
1004
1005
1
2
6103
FTA
7104
3602
3601
WTR
7105
6104
1006
2
3600
2
3502
3501
3500
WTL
7105
6104
9001
WDS.3
8203 101 74512
8203 101 74512
SW1
RECP
0003
SW3
SVHS
0004
SW2
INIT


1
2
3
4
5
6
7
8
9
P
O
N
M
L
K
J
I
H
G
F
E
D
C
B
A
TAE
S298P
7106
STRIP
8003
WTL
TCRT5000
7105
390
3500
27K
3502
1K
3501
+5D
+5D
RECP
SW1
1602
STRIP
8004
68K
3401
6D19
V298PB
8005
STRIP
STRIP
8002
FTA
TCST1030
7104
390
3602
33
3601
1K
3203
1K
3202
4K7
3201
5K6
3200
5
6
7
8
INIT
SW2
1604
SW3
1603
SVHS
WTR
TCRT5000
7103
390
3600
STRIP
8006
GNDD
TAE
+5D
WTL
RECP
FTA
WTR
LED
INIT
TAS
SVHS
GNDM1
FG
CAP
CREV
+14M1
GNDD
L2
TO CAPSTAN MOTOR
CON3
to CMO
1967
LIMIT
STRIP
8001
9
BC548B
7100
BC548B
7101
4K7
3105
4K7
3100
4K7
3104
10u 50V
2001
10K
3103
5K6
3300
STRIP
8007
S298P
7102
TAS

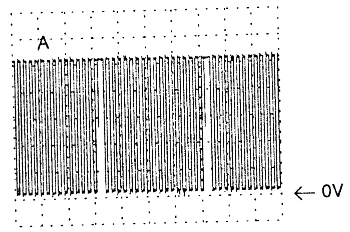
LY BOARD
ECTRONIC
CTOR 1913


CON3
1001
0007
1 2
2
1002
1
3401
TAE
1 2
1003
7106
1
1004
6103
2
WTL
3502
3501
3500
7105
6104
9001
WDS.3
SW1
RECP


TAE
S298P 7106
STRIP 8003
3401 68K
GNDD
WTL
TCRT5000 7105
3500 390
+5D
3502 22K
3501 1K
SW1 1502
RECP
STRIP 8004
STRIP 8002
6103 V298 PB
8005 STRIP
GNDD
FTA
3602 390
TCST1030 7104
3601 33
STRIP 8006
INIT
SW2 1604
SW3 1603
SVHS
WTR
TCRT5000 7103
3600 390
1K 3203
1K 3202
22K 3201
56K 3200
⑤ ⑥ ⑦ ⑧ ⑨
TAE
+5D
WTL
RECP
FTA
WTR
LED
INIT
TAS
SVHS
GNDM1
FG
CAP
CREV
+14M1
GNDD
L2
1965
TO FAMILY BOARD DECKELECTRONIC F3
STRIP 8001
TO CAPSTAN MOTOR
to CMO 1967
CON3
LIMIT
3103 10K
3300 68K
BC548B 7100
4K7 3105
3100 4K7
10u 50V 2001
4K7 3104
BC548B 7101
STRIP 8007
S298P 7102
TAS
1 2 3 4 5 6 7 8 9 10
P O N M L K J I H G F E D C B A

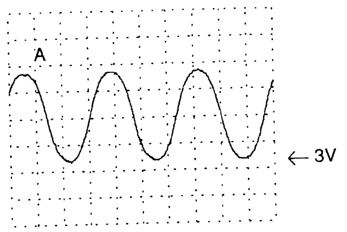
SW1	L 1
MP101	K 9
8007	B 8
8006	I 5
8005	K 4
8004	N 5
8003	O 8
8002	L 7
8001	G 5
7106	P 8
7105	M 1
7104	J 2
7103	H 2
7102	A 8
7101	D 8
7100	E 8
6103	L 4
3602	K 2
3601	J 4
3600	H 2
3502	M 2
3501	M 2
3500	N 2
3401	N 8
3300	D 9
3203	J 5
3202	J 6
3201	J 6
3200	J 6
3105	E 7
3104	D 7
3103	E 9
3100	D 7
2001	D 6
1969	A 7
1968	A 6
1967	F 2
1965	I10
1604	H 3
1603	H 4

A: DC, 1 V/Div, 10 ms/Div



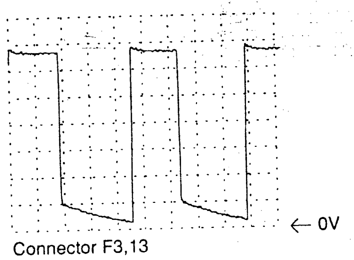
Connector F4,1
PG/FG

A: AC, 0.5 V/Div, 0.2 ms/Div



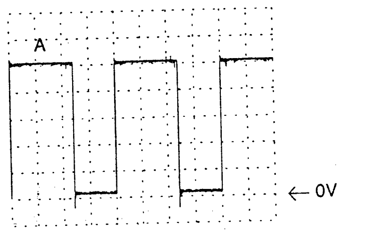
Connector F3,2
FG

A: DC, 0.5 V/Div, 0.5 ms/Div



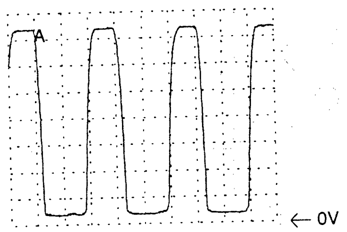
Connector F3,13
LED

A: DC, 1 V/Div, 10 ms/Div



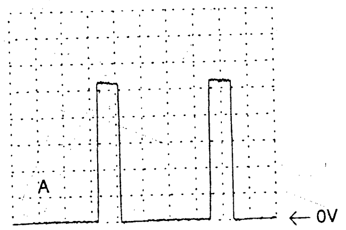
IC 7411 Pin 2
CTL1 REC

A: DC, 0.5 V/Div, 2 ms/Div



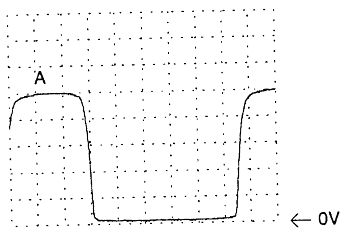
Connector F3,12
WTR Wind

A: DC, 1 V/Div, 10 us/Div



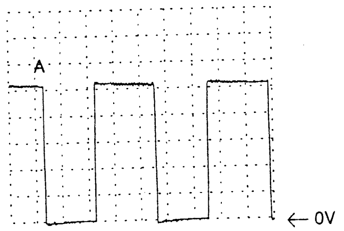
IC 7410 Pin 30
CAP

A: DC, 1 V/Div, 2 ms/Div



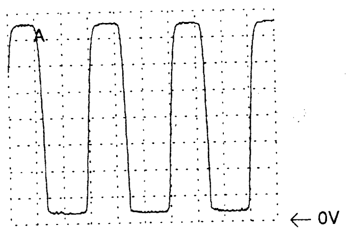
Connector F3,11
FTA Threading

A: DC, 1 V/Div, 10 us/Div



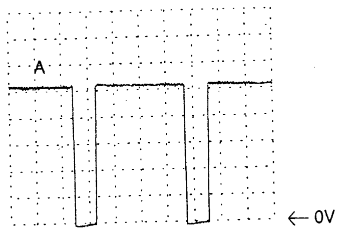
IC 7410 Pin 31
REEL

A: DC, 0.5 V/Div, 2 ms/Div



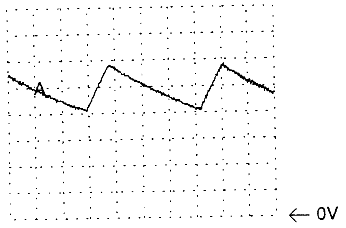
Connector F3,9
WTL Wind

A: DC, 1 V/Div, 10 us/Div



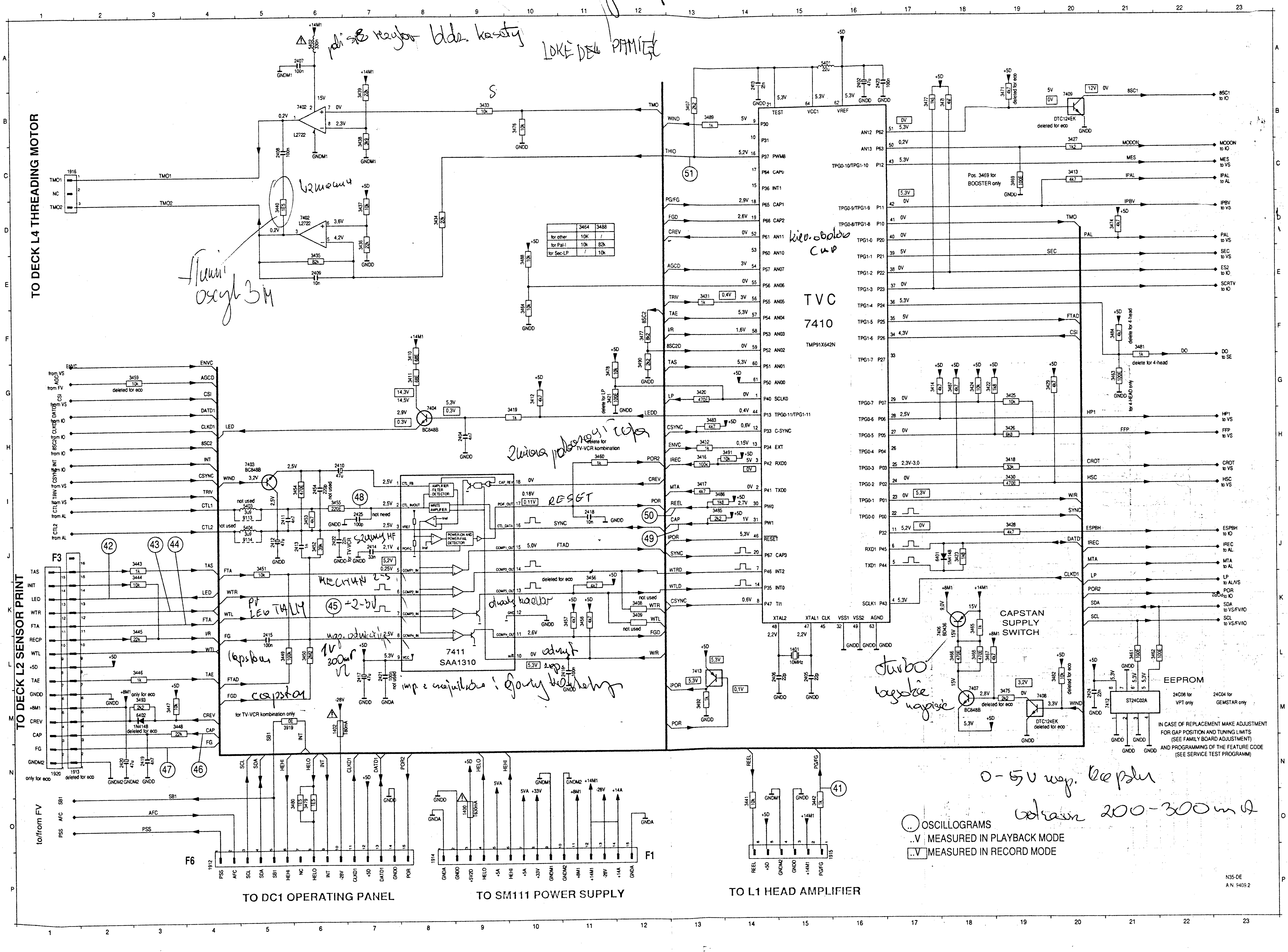
IC 7410 Pin 32
THIO

A: DC, 0.2 V/Div, 10 us/Div



Connector F3,3
CAP

FAMILY BOARD DECKELECTRONIC - DE N3 N5


30 om
TO DECK L4 THREADING MOTOR
TO DECK L2 SENSOR PRINT
to/from FV
TVC
7410
TMP91X642N
7411
SAA1310
CAPSTAN SUPPLY SWITCH
EEPROM
ST24C02A
F3
F6
F1
TO DC1 OPERATING PANEL
TO SM111 POWER SUPPLY
TO L1 HEAD AMPLIFIER
IN CASE OF REPLACEMENT MAKE ADJUSTMENT FOR GAP POSITION AND TUNING LIMITS (SEE FAMILY BOARD ADJUSTMENT) AND PROGRAMMING OF THE FEATURE CODE (SEE SERVICE TEST PROGRAMM)
RESET
capstan
0-5V nap. [illegible]
[illegible] 200-300 mA
N35-DE
A.N. 9409.2

○ OSCILLOGRAMS

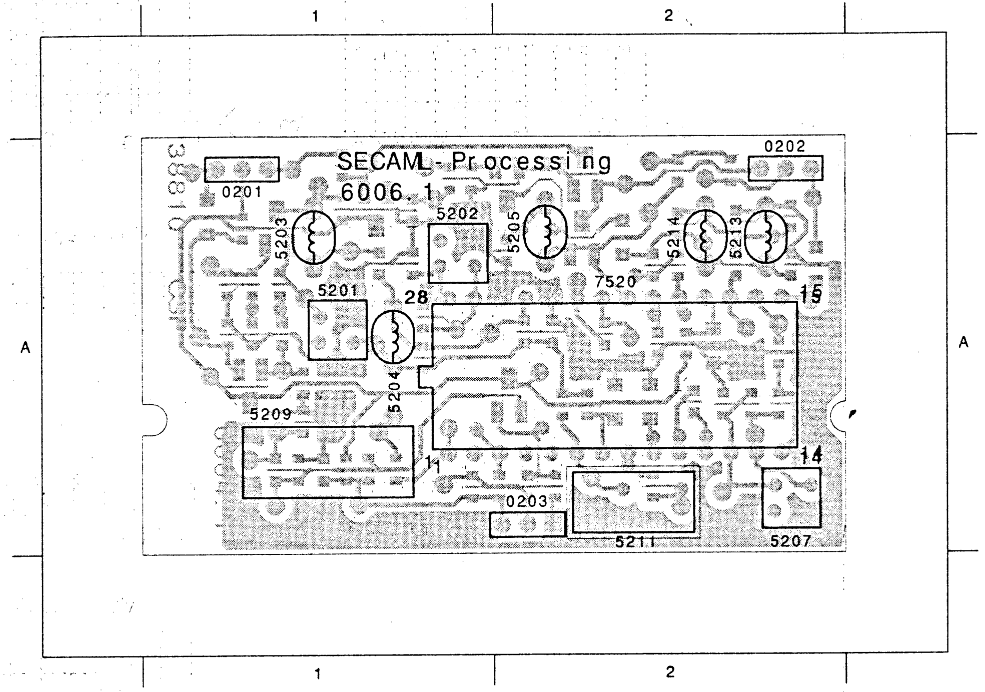
..V MEASURED IN PLAYBACK MODE

[..V] MEASURED IN RECORD MODE

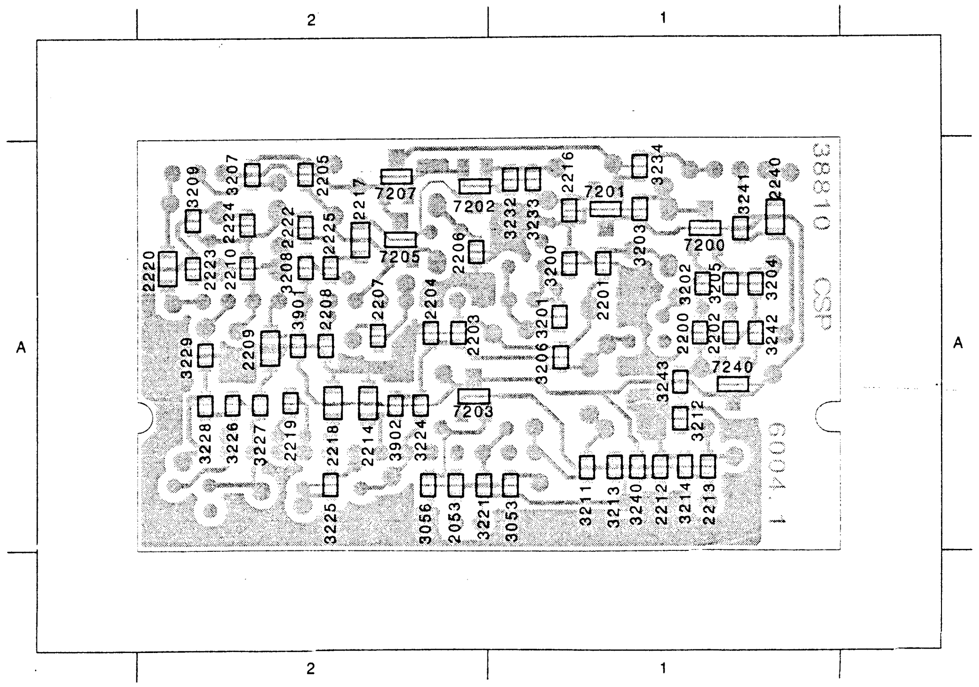
1400	O 9
1401	L15
1402	M 6
1912	P 4
1913	N 1
1914	P 8
1915	P15
1916	C 2
1920	N 1
2402	A16
2403	A14
2404	H 9
2405	L15
2406	L14
2407	A 6
2408	C 5
2409	E 6
2410	H 6
2411	I 5
2412	J 5
2413	J 6
2414	J 7
2415	L 5
2416	L11
2417	L 7
2418	I11
2419	N 3
2420	N 2
2421	L 7
2422	J 6
2423	A16
2424	M20
2425	I 7
2454	I 6
3407	B13
3408	K12
3409	K12
3410	F 8
3411	G 8
3412	G10
3413	C20
3414	G17
3416	H13
3417	I13
3418	H19
3419	G10
3420	G13
3421	G11
3422	G18
3423	J18
3424	G18
3425	G19
3426	H19
3427	C20
3428	J19
3429	G20
3430	I19
3431	E13
3432	H13
3433	B 9
3434	D 8
3435	E 6
3436	D 7
3437	D 7
3438	B 7
3439	B 7
3440	D 5
3441	O14
3442	O15
3443	J 3
3444	J 3
3445	K 3
3446	L 3
3447	M 3
3448	M 3
3449	L 5
3450	L 6
3451	J 5
3452	J 6
3453	I 6
3454	I 6
3455	I 6
3456	K11
3457	K11
3458	K11
3459	G 3
3460	H11
3461	L21
3462	L21
3463	G21
3464	F10
3465	L18
3466	L18
3467	L18
3468	L18
3469	C19
3471	B19
3472	B17
3473	B18
3474	D21
3475	M19
3476	B10
3477	F12
3478	G11
3479	O 6
3480	O 5
3481	F21
3482	L20
3483	H13
3484	F21
3485	I13
3486	I13
3487	G18
3488	E10
3489	B13
3490	G12
3491	H14
3492	M13
3493	M 3
3919	M 5
5401	A15
5402	A 6
5403	I 5
5404	J 5
6401	J17
6402	M 3
7402	B 6
7402	D 6
7403	H 5
7404	G 8
7406	L18
7407	M18
7408	M19
7409	B20
7410	F15
7411	L 8
7412	M21
7413	L13
9113	I 5
9114	J 5

CHROMA SIGNAL SECAM PROCESSING BOARD CSP N3 N5

0201	A 1
0202	A 2
0203	A 2
5201	A 1
5202	A 1
5203	A 1
5204	A 1
5205	A 2
5207	A 2
5209	A 1
5211	A 2
5213	A 2
5214	A 2
7520	A 2

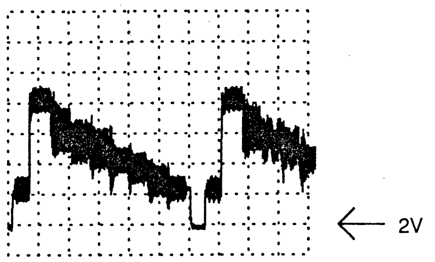

1
2
A
A
3810
SECAM - Processing
6006.1
0201
0202
0203
5201
5202
5203
5204
5205
5207
5209
5211
5213
5214
7520
28
15
1
14
1
2

2053	A 2
2200	A 1
2201	A 1
2202	A 1
2203	A 2
2204	A 2
2205	A 2
2206	A 2
2207	A 2
2208	A 2
2209	A 2
2210	A 2
2212	A 1
2213	A 1
2214	A 2
2216	A 1
2217	A 2
2218	A 2
2219	A 2
2220	A 2
2222	A 2
2223	A 2
2224	A 2
2225	A 2
2240	A 1
3053	A 1
3056	A 2
3200	A 1
3201	A 1
3202	A 1
3203	A 1
3204	A 1
3205	A 1
3206	A 1
3207	A 2
3208	A 2
3209	A 2
3211	A 1
3212	A 1
3213	A 1
3214	A 1
3221	A 2
3224	A 2
3225	A 2
3226	A 2
3227	A 2
3228	A 2
3229	A 2
3232	A 1
3233	A 1
3234	A 1
3240	A 1
3241	A 1
3242	A 1
3243	A 1
3901	A 2
3902	A 2
7200	A 1
7201	A 1
7202	A 2
7203	A 2
7205	A 2
7207	A 2
7240	A 1


2
1
A
A
3810 CSP
6004.1
7207
7202
7201
7200
7205
7203
7240
2220
3229
3228
3226
3227
2219
2218
2214
3902
3224
3225
3056
2053
3221
3053
3211
3213
3240
2212
3214
2213
3209
2224
3207
2205
2217
2222
2225
2210
2223
3208
3901
2209
2208
2207
2206
2204
2203
3201
3206
3232
3233
3200
2216
2201
3234
3203
3202
3205
2200
2202
3243
3212
3241
2240
3204
3242

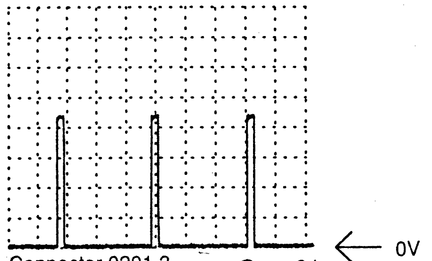
OSCILLOGRAMS CHROMA SECAM PRINT CSP

A: DC, 200mV/Div, 10us/Div



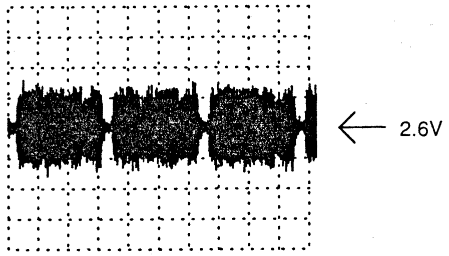
Connector 0201,1 VBS Osc. 60

A: DC, 1 V/Div, 20us/Div



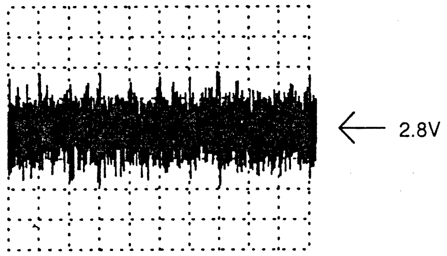
Connector 0201,3 CSYNC Osc. 61

A: AC, 50mV/Div, 20us/Div



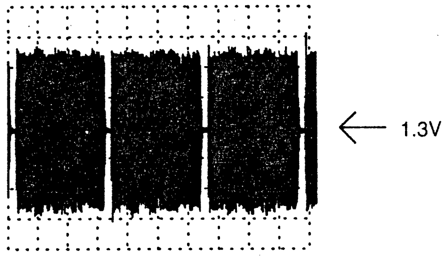
IC 7520,25 Osc. 62

A: AC, 100mV/Div, 20ms/Div



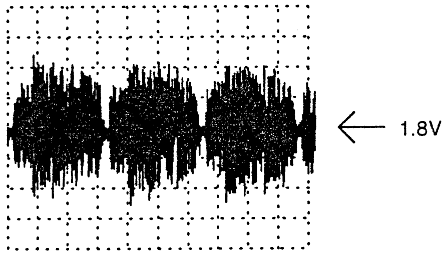
Connector 0202,2 FMPV Osc. 63

A: AC, 100mV/Div, 20us/Div



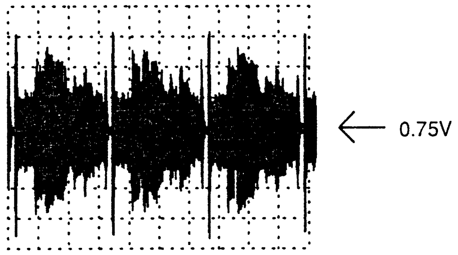
IC 7520,16 Osc. 64

A: AC, 200mV/Div, 20us/Div



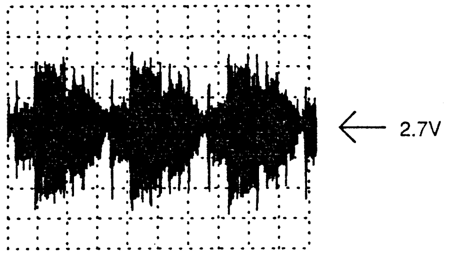
IC 7520,1 Osc. 65

A: AC, 100mV/Div, 20us/Div



Connector 0202,3 CHRS Osc. 66

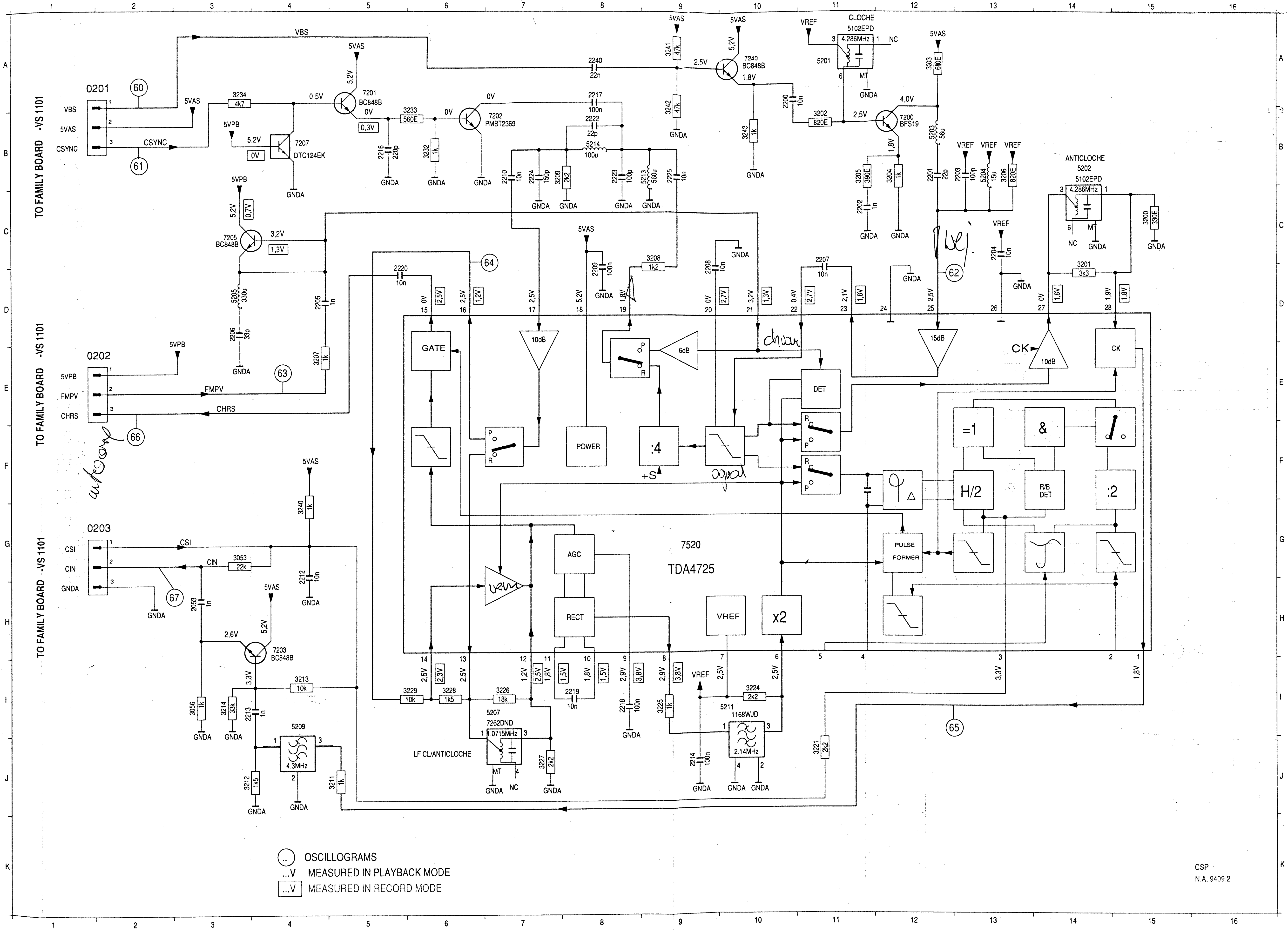
A: AC, 50mV/Div, 20us/Div



Connector 0203,2 CIN Osc. 67

REMARKS :

CHROMA SIGNAL SECAM PROCESSING BOARD CSP **N3** **N5**


VBS
5VAS
5VPB
0201
60
61
VBS
5VAS
CSYNC
CSYNC
3234
4k7
0.5V
7201
BC848B
0V
5,2V
0,3V
3233
560E
0V
7202
PMBT2369
3232
1k
2216
220p
5,2V
7207
DTC124EK
0V
GNDA
TO FAMILY BOARD -VS 1101
2240
22n
2217
100n
2222
22p
5214
100u
2210
10n
2224
150p
3209
2k2
2223
100p
5213
560u
2225
10n
3241
47k
3242
47k
2.5V
7240
BC848B
1,8V
5,2V
3243
1k
2200
10n
3202
820E
VREF
CLOCHE
5102EPD
4.286MHz
NC
5201
MT
7200
BFS19
4,0V
2,5V
3203
680E
5203
56u
3205
390E
3204
1k
2202
1n
2201
22p
2203
100p
5204
15u
3206
820E
ANTICLOCHE
5202
5102EPD
4.286MHz
3200
330E
3201
3k3
2204
10n
7205
BC848B
3,2V
1,3V
0,7V
5205
330u
2206
33p
2205
1n
3207
1k
0202
5VPB
FMPV
CHRS
63
66
64
2220
10n
2209
100n
3208
1k2
2208
10n
2207
10n
62
GATE
10dB
6dB
DET
15dB
CK
10dB
CK
POWER
:4
+S
=1
&
H/2
R/B DET
:2
PULSE FORMER
AGC
RECT
VREF
x2
7520
TDA4725
0203
CSI
CIN
GNDA
3053
22k
67
2053
1n
5VAS
3240
1k
2212
10n
7203
BC848B
2,6V
3,3V
3213
10k
3056
1k
3214
33k
2213
1n
5209
4.3MHz
3212
1k5
3211
1k
3229
10k
3228
1k5
3226
18k
5207
7262DND
1.0715MHz
LF CL/ANTICLOCHE
3227
2k2
2219
10n
2218
100n
3225
1k
3224
2k2
5211
1168WJD
2.14MHz
2214
100n
3221
2k2
65
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
K

○ OSCILLOGRAMS
...V MEASURED IN PLAYBACK MODE
☐...V MEASURED IN RECORD MODE

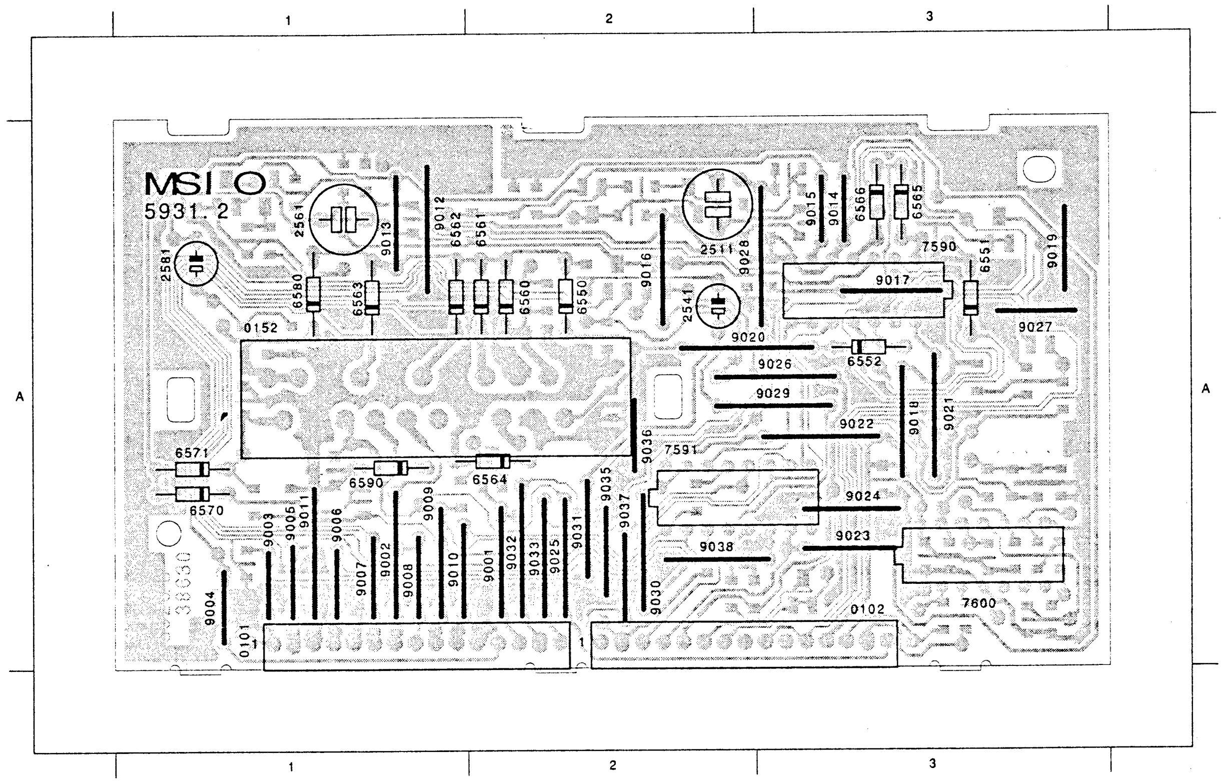
CSP
N.A. 9409.2

0201	A 2
0202	G 2
2053	H 3
2200	A10
2201	B12
2202	C11
2203	B13
2204	C13
2205	D 4
2206	D 3
2207	C11
2208	D 9
2209	D 8
2210	B 7
2212	G 4
2213	I 3
2214	J 9
2216	B 5
2217	A 8
2218	I 8
2219	I 8
2220	D 5
2222	B 8
2223	B 8
2224	B 7
2225	B 9
2240	A 8
3053	G 3
3056	I 3
3200	C15
3201	D14
3202	B11
3203	A12
3204	B12
3205	B11
3206	B13
3207	E 4
3208	C 9
3209	B 7
3211	J 5
3212	J 3
3213	I 4
3214	I 3
3221	J11
3224	I10
3225	I 9
3226	I 7
3227	J 7
3228	I 6
3229	I 6
3232	B 6
3233	B 6
3234	A 3
3240	G 4
3241	A 9
3242	A 9
3243	B10
5201	A11
5202	B14
5203	B12
5204	B13
5205	D 3
5207	I 7
5209	I 4
5211	I10
5213	B 9
5214	B 8
7200	B12
7201	A 5
7202	B 7
7203	H 4
7205	C 3
7207	B 4
7240	A10
7520	G 9

REMARKS :

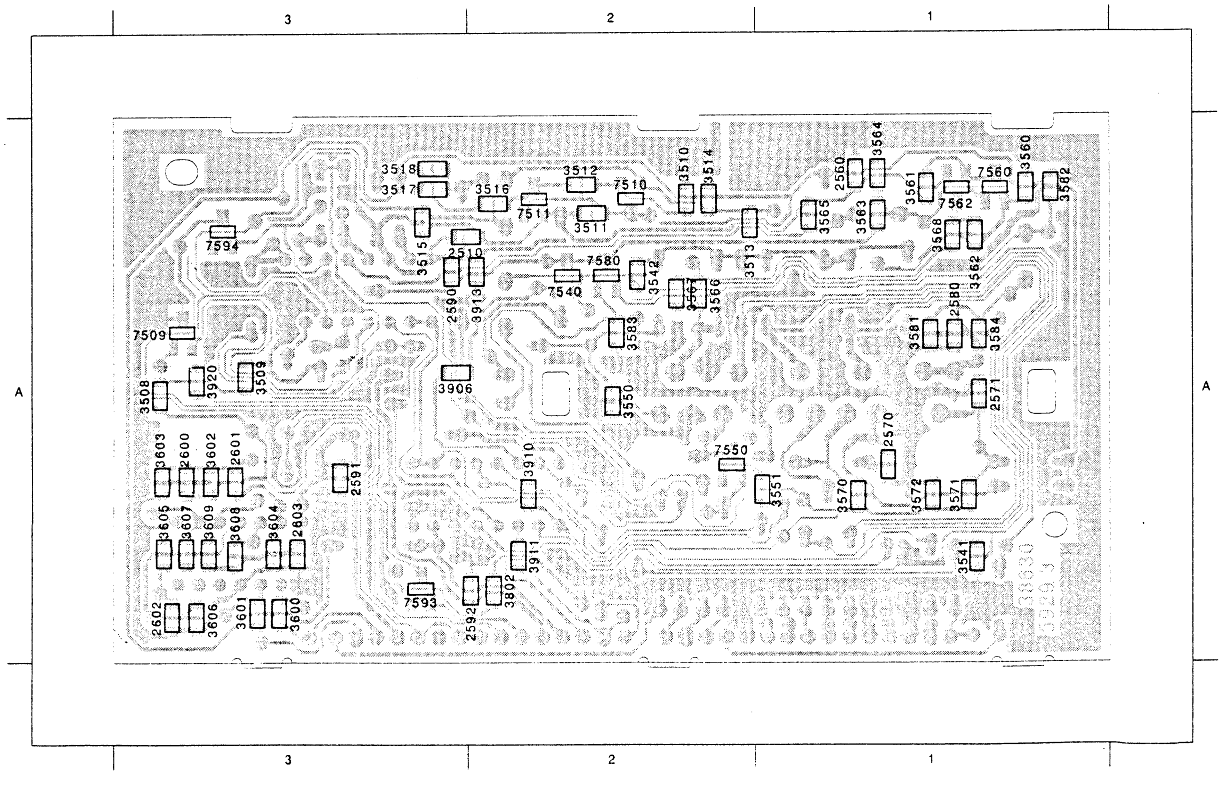
SCART2, IN/OUT, VPS BOARD MSIO, MSIO/VPS

0101 A 1	2581 A 1	6562 A 1	6571 A 1	9001 A 2	9007 A 1	9013 A 1	9019 A 3	9025 A 2	9031 A 2	9038 A 2
0102 A 2	6550 A 2	6563 A 1	6580 A 1	9002 A 1	9008 A 1	9014 A 3	9020 A 2	9026 A 3	9032 A 2	
0152 A 1	6551 A 3	6564 A 2	6590 A 1	9003 A 1	9009 A 1	9015 A 3	9021 A 3	9027 A 3	9033 A 2	
2511 A 2	6552 A 3	6565 A 3	7590 A 3	9004 A 1	9010 A 1	9016 A 2	9022 A 3	9028 A 3	9035 A 2	
2541 A 2	6560 A 2	6566 A 3	7591 A 2	9005 A 1	9011 A 1	9017 A 3	9023 A 3	9029 A 3	9036 A 2	
2561 A 1	6561 A 2	6570 A 1	7600 A 3	9006 A 1	9012 A 1	9018 A 3	9024 A 3	9030 A 2	9037 A 2	



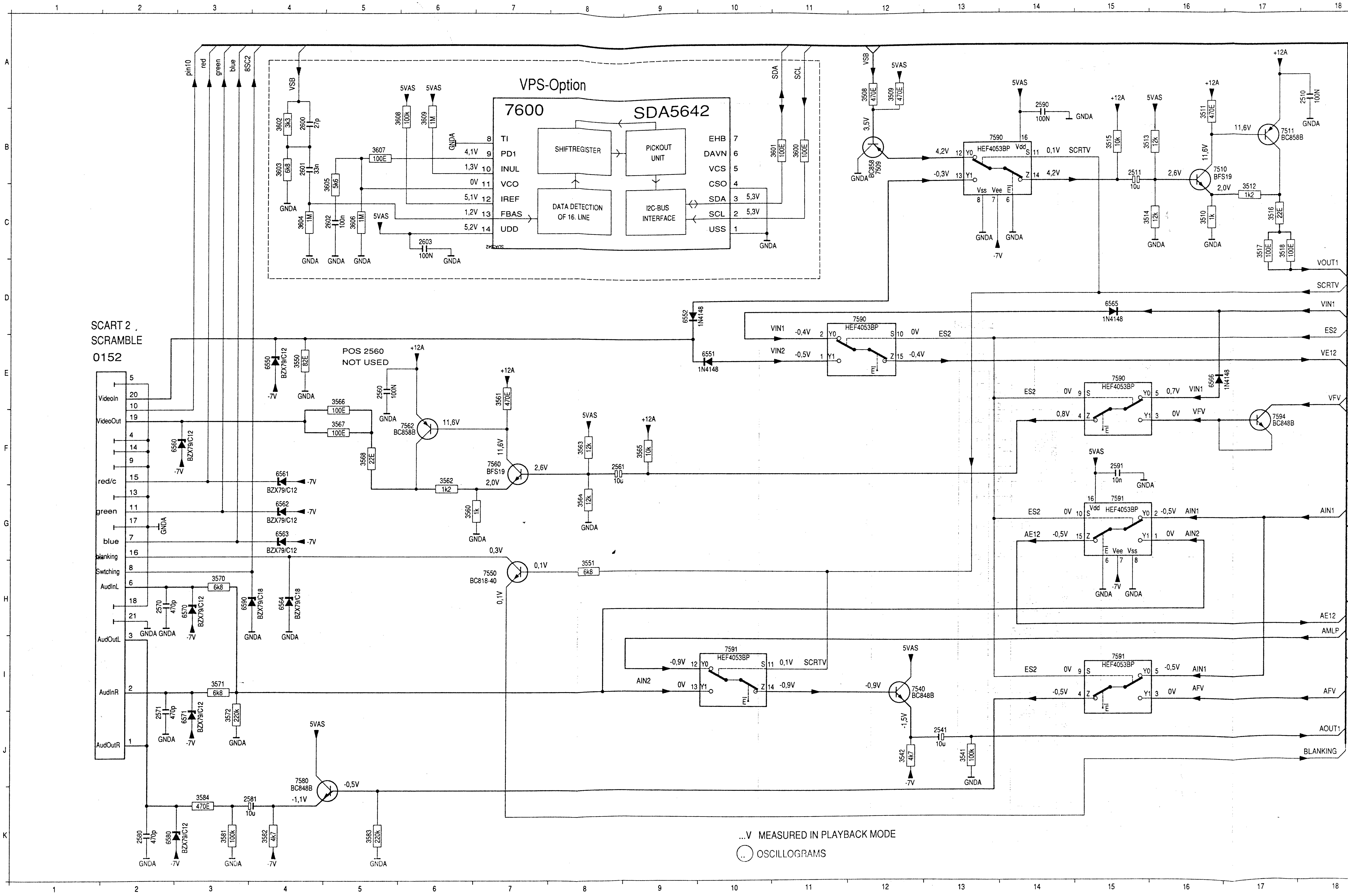
1
2
3
A
A
MSI O
5931.2
2581
2561
6590
6563
9013
9012
6562
6561
6560
6550
9016
2541
2511
9028
9015
9014
6566
6565
7590
9017
6551
9019
9027
9020
9026
6552
9029
9022
9018
9021
0152
6571
6570
6590
6564
9036
7591
9035
9037
9024
9023
9038
9030
7600
0102
9003
9005
9011
9006
9007
9002
9008
9009
9010
9001
9032
9033
9025
9031
9004
0101
1
1
2
3

2510 A 3	2592 A 2	3510 A 2	3517 A 3	3561 A 1	3568 A 1	3584 A 1	3606 A 3	3911 A 2	7550 A 2
2560 A 1	2600 A 3	3511 A 2	3518 A 3	3562 A 1	3570 A 1	3600 A 3	3607 A 3	3913 A 2	7560 A 1
2570 A 1	2601 A 3	3512 A 2	3541 A 1	3563 A 1	3571 A 1	3601 A 3	3608 A 3	3920 A 3	7562 A 1
2571 A 1	2602 A 3	3513 A 2	3542 A 2	3564 A 1	3572 A 1	3602 A 3	3609 A 3	7509 A 3	7580 A 2
2580 A 1	2603 A 3	3514 A 2	3550 A 2	3565 A 1	3581 A 1	3603 A 3	3802 A 2	7510 A 2	7593 A 3
2590 A 3	3508 A 3	3515 A 3	3551 A 1	3566 A 2	3582 A 1	3604 A 3	3906 A 3	7511 A 2	7594 A 3
2591 A 3	3509 A 3	3516 A 2	3560 A 1	3567 A 2	3583 A 2	3605 A 3	3910 A 2	7540 A 2	



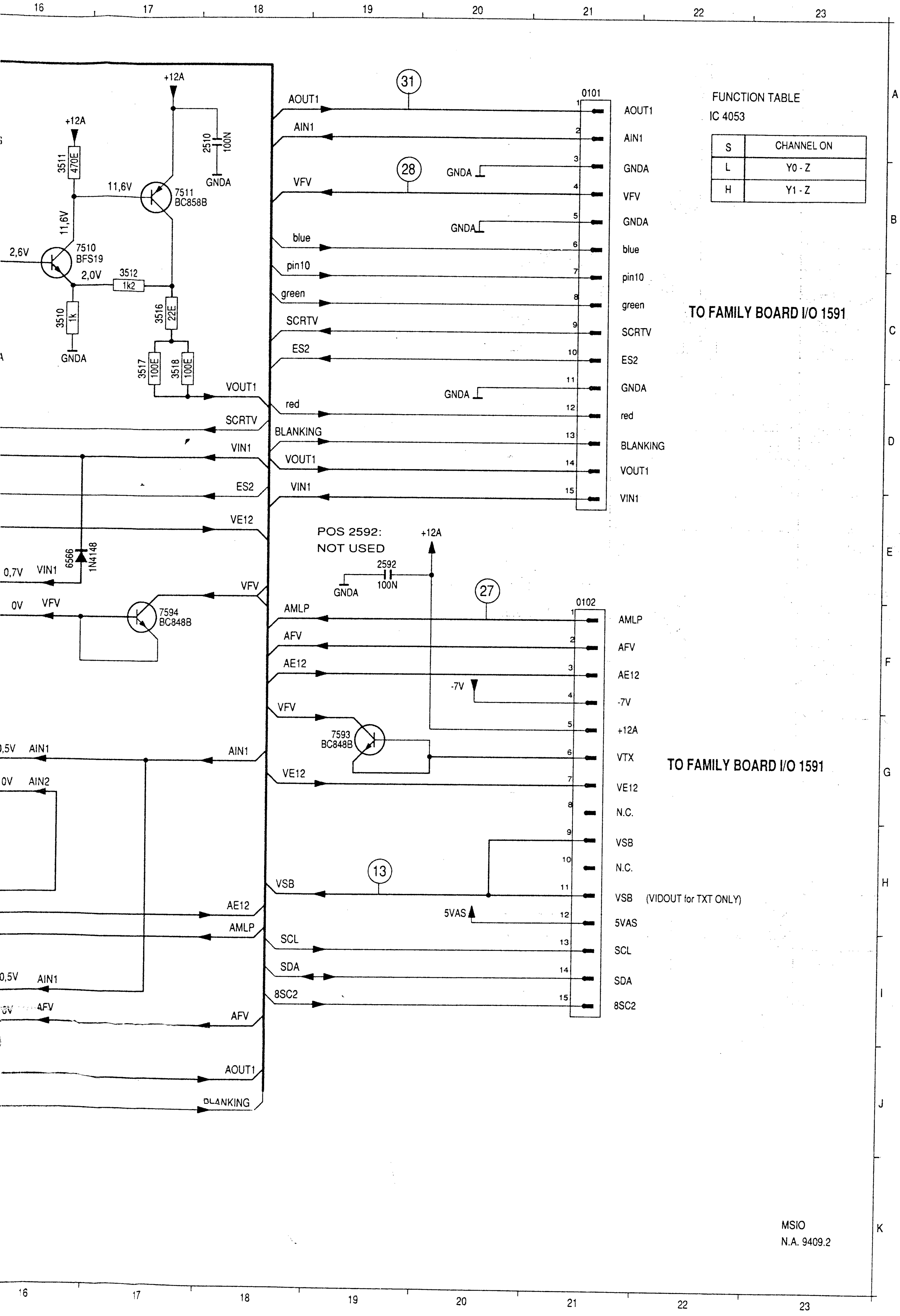
3
2
1
A
A
3518
3517
3516
3512
7511
3511
7510
3510
3514
7594
3515
2510
2590
3913
7580
7540
3542
3583
2561
3566
3513
3565
2560
3563
3564
3561
7562
7560
3560
3562
3568
3582
2580
3584
3581
2571
7509
3508
3920
3509
3906
3550
7550
2570
3551
3570
3572
3571
3603
2600
3602
2601
2591
3910
3605
3607
3609
3608
3604
2603
3911
3541
2602
3606
3601
3600
7593
2592
3802

SCART2, IN/OUT, VPS BOARD MSIO, MSIO/VPS **N3** **N5**


VPS-Option
7600
SDA5642
SHIFTREGISTER
PICKOUT UNIT
DATA DETECTION OF 16. LINE
I2C-BUS INTERFACE
TI 8
PD1 9
INUL 10
VCO 11
IREF 12
FBAS 13
UDD 14
EHB 7
DAVN 6
VCS 5
CSO 4
SDA 3
SCL 2
USS 1
pin10
red
green
blue
8SC2
VSB
SDA
SCL
SCART 2 , SCRAMBLE 0152
VideoIn
VideoOut
red/c
green
blue
blanking
Swtching
AudInL
AudOutL
AudInR
AudOutR
POS 2560 NOT USED
7590 HEF4053BP
7591 HEF4053BP
7509 BC858
7510 BFS19
7511 BC858B
7550 BC818-40
7560 BFS19
7562 BC858B
7540 BC848B
7580 BC848B
7594 BC848B
6550 BZX79/C12
6551 1N4148
6552 1N4148
6560 BZX79/C12
6561 BZX79/C12
6562 BZX79/C12
6563 BZX79/C12
6564 BZX79/C18
6565 1N4148
6566 1N4148
6570 BZX79/C12
6571 BZX79/C12
6580 BZX79/C12
6590 BZX79/C18
VOUT1
SCRTV
VIN1
ES2
VE12
VFV
AIN1
AIN2
AE12
AMLP
AFV
AOUT1
BLANKING
5VAS
+12A
-7V
GNDA

...V MEASURED IN PLAYBACK MODE

○ OSCILLOGRAMS


16
17
18
19
20
21
22
23
A
B
C
D
E
F
G
H
I
J
K
+12A
2510
100N
GNDA
+12A
3511
470E
11,6V
7511
BC858B
11,6V
2,6V
7510
BFS19
2,0V
3512
1k2
3510
1k
GNDA
3516
22E
3517
100E
3518
100E
VOUT1
SCRTV
VIN1
ES2
VE12
6566
1N4148
0,7V
VIN1
VFV
0V
VFV
7594
BC848B
0,5V
AIN1
AIN1
0V
AIN2
AE12
AMLP
0,5V
AIN1
0V
AFV
AFV
AOUT1
BLANKING
31
28
27
13
0101
AOUT1
AIN1
GNDA
VFV
GNDA
blue
pin10
green
SCRTV
ES2
GNDA
red
BLANKING
VOUT1
VIN1
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
TO FAMILY BOARD I/O 1591
POS 2592:
NOT USED
+12A
2592
100N
GNDA
0102
AMLP
AFV
AE12
-7V
-7V
VFV
7593
BC848B
+12A
VTX
VE12
N.C.
VSB
N.C.
VSB
VSB (VIDOUT for TXT ONLY)
5VAS
5VAS
SCL
SDA
8SC2
TO FAMILY BOARD I/O 1591

FUNCTION TABLE
IC 4053

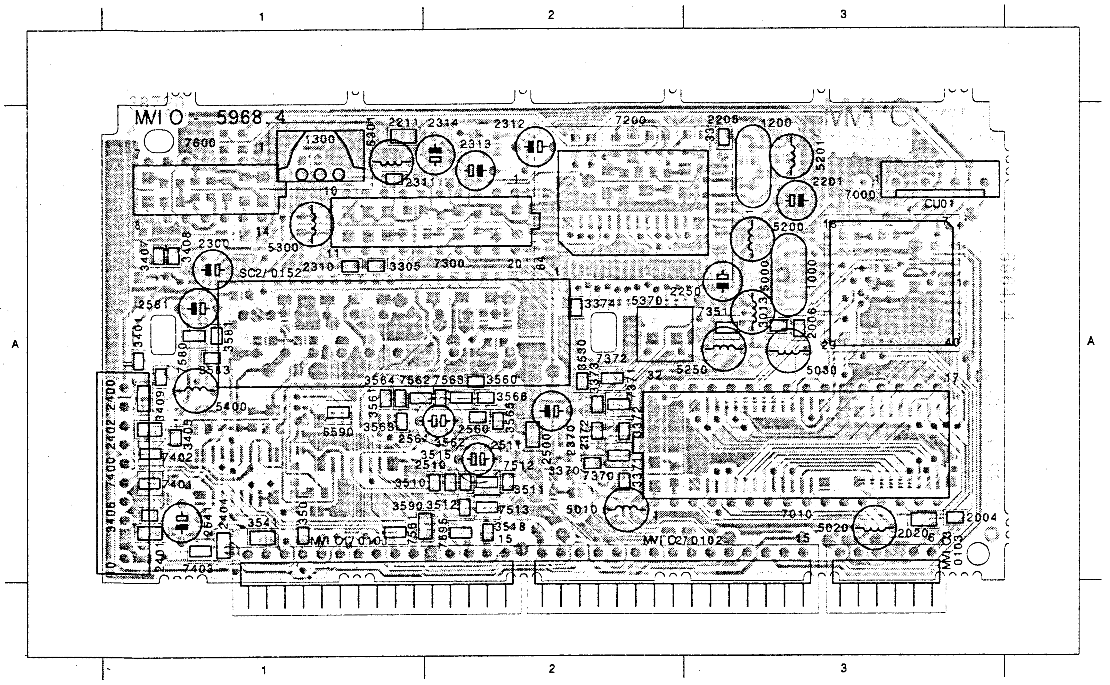
S	CHANNEL ON
L	Y0 - Z
H	Y1 - Z

MSIO
N.A. 9409.2

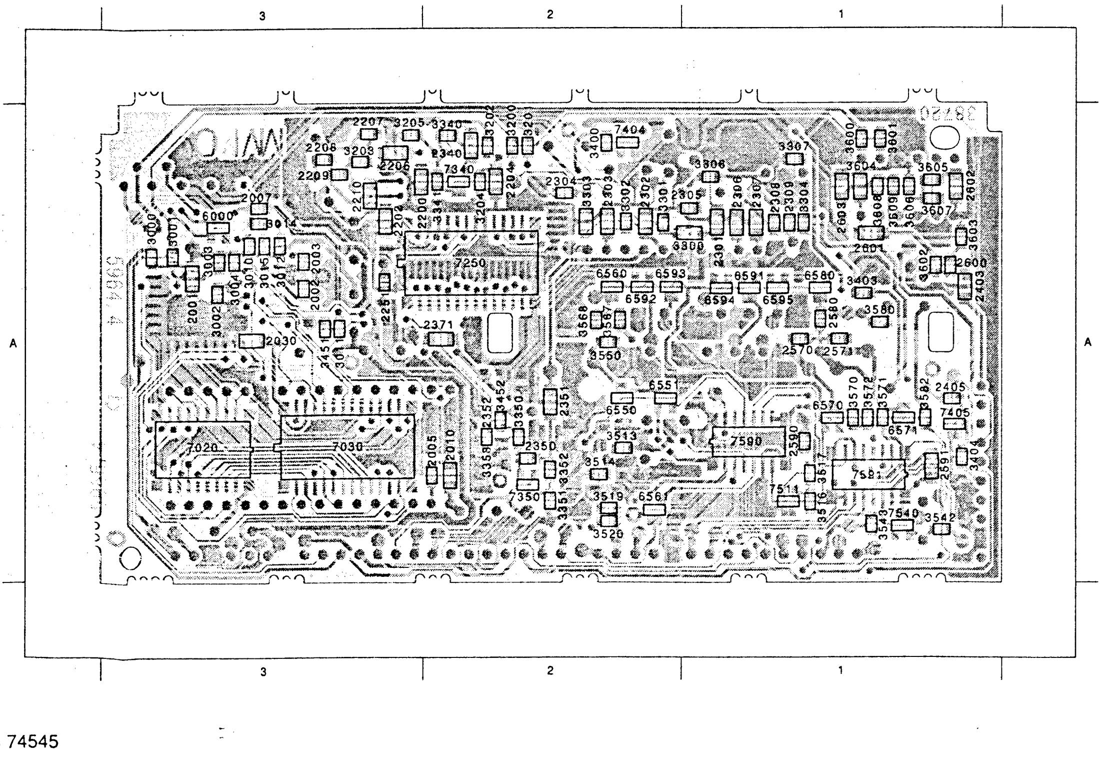
0101	A21
0102	F21
0152	E 1
2510	A18
2511	B15
2541	J13
2560	E 5
2561	F 8
2570	H 2
2571	J 2
2580	K 2
2581	K 4
2590	B14
2591	F15
2592	E19
2600	B 4
2601	B 4
2602	C 5
2603	C 6
3508	A12
3509	A12
3510	C16
3511	B16
3512	C17
3513	B15
3514	C15
3515	B15
3516	C17
3517	C17
3518	C17
3541	J13
3542	J12
3550	E 4
3551	H 8
3560	G 6
3561	E 7
3562	F 6
3563	F 8
3564	G 8
3565	F 9
3566	E 5
3567	F 5
3568	F 5
3570	H 3
3571	I 3
3572	J 3
3581	K 3
3582	K 4
3583	K 5
3584	K 3
3600	B11
3601	B11
3602	B 4
3603	B 4
3604	C 4
3605	C 5
3606	C 5
3607	B 5
3608	B 5
3609	B 6
6550	E 4
6551	E10
6552	D 9
6560	F 3
6561	F 4
6562	G 4
6563	G 4
6564	H 4
6565	D15
6566	E16
6570	H 3
6571	J 3
6580	K 2
6590	H 3
7509	B12
7510	B16
7511	B17
7540	I12
7550	H 7
7560	F 7
7562	F 6
7580	J 4
7590	B13
7590	D12
7590	E15
7591	G15
7591	I10
7591	I15
7593	G19
7594	F17
7600	B 7

SCART2, IN/OUT, VPS, TXT BOARD MVIO

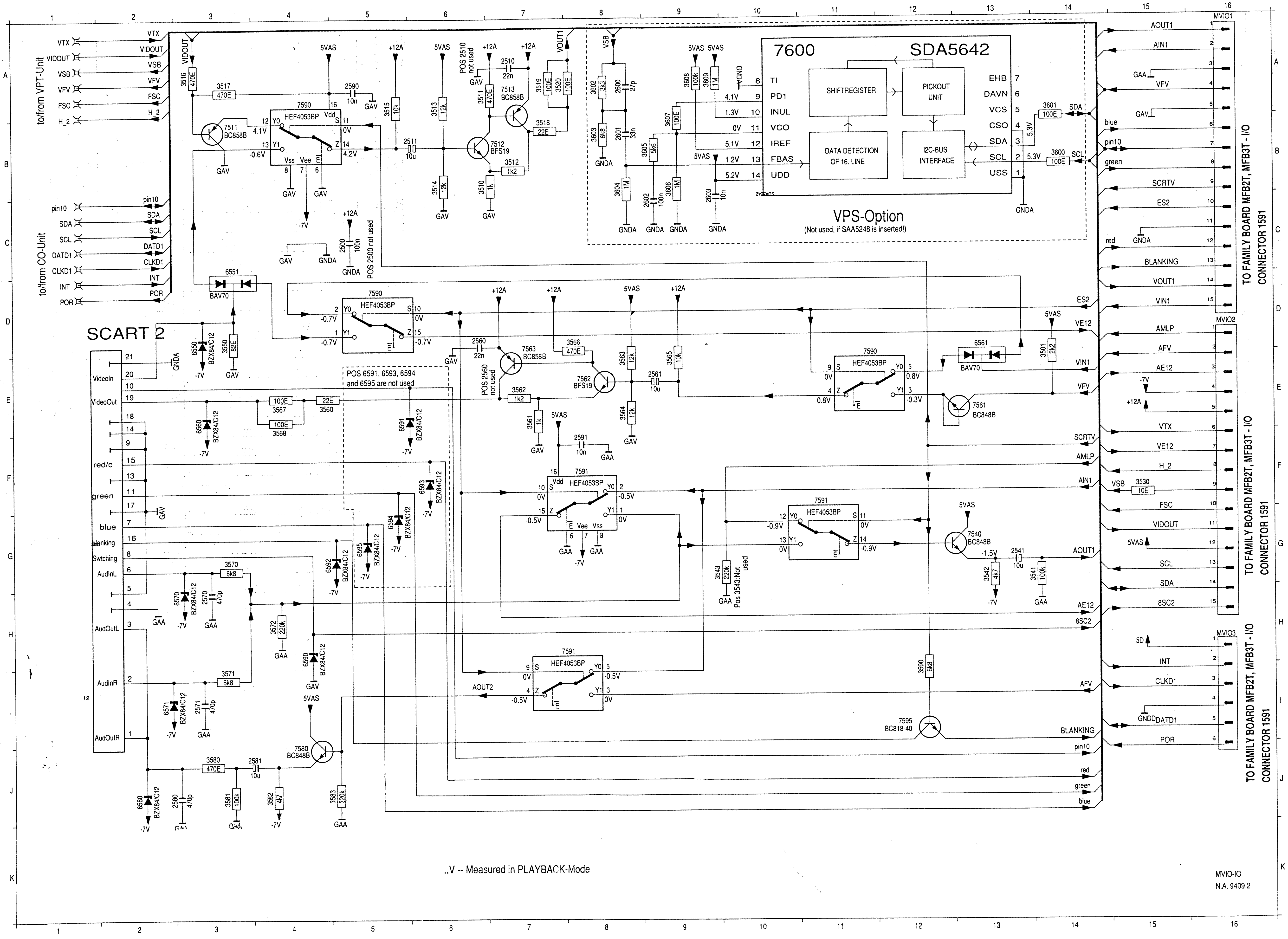
1000	A 3	2300	A 1	2402	A 1	3305	A 1	3408	A 1	3560	A 2	5000	A 3	5400	A 1	7400	A 1	7595	A 2
1200	A 3	2310	A 1	2404	A 1	3370	A 2	3409	A 1	3561	A 1	5010	A 2	6590	A 1	7401	A 1	7600	A 1
1300	A 1	2311	A 1	2500	A 2	3371	A 2	3501	A 1	3562	A 2	5020	A 3	7000	A 3	7402	A 1	CU01	A 3
2004	A 3	2312	A 2	2510	A 2	3372	A 2	3510	A 2	3563	A 1	5030	A 3	7010	A 3	7403	A 1	MVI O1	A 1
2006	A 3	2313	A 2	2511	A 2	3373	A 2	3511	A 2	3564	A 1	5200	A 3	7200	A 2	7512	A 2	MVI O2	A 2
2020	A 3	2314	A 2	2541	A 1	3374	A 2	3512	A 2	3565	A 2	5201	A 3	7300	A 2	7513	A 2	MVI O3	A 3
2201	A 3	2370	A 2	2560	A 2	3401	A 1	3515	A 2	3566	A 2	5250	A 3	7351	A 3	7561	A 1	SC2	A 1
2205	A 3	2372	A 2	2561	A 2	3405	A 1	3518	A 2	3581	A 1	5300	A 1	7370	A 2	7562	A 1		
2211	A 1	2400	A 1	2581	A 1	3406	A 1	3530	A 2	3583	A 1	5301	A 1	7371	A 2	7563	A 2		
2250	A 3	2401	A 1	3013	A 3	3407	A 1	3541	A 1	3590	A 2	5370	A 2	7372	A 2	7580	A 1		


1
2
3
A
MVI O 5968.4
7600
1300
SC2/0152
7300
7200
1200
7000
CU01
5200
5000
1000
7351
5370
5250
5400
6590
7400
7402
7403
5010
7010
5020
MVI O1
MVI O2/0102
MVI O3

2001	A 3	2208	A 3	2309	A 1	2591	A 1	3012	A 3	3303	A 2	3404	A 1	3567	A 2	3605	A 1	6580	A 1	7405	A 1
2002	A 3	2209	A 3	2340	A 2	2600	A 1	3014	A 3	3304	A 1	3451	A 3	3568	A 2	3606	A 1	6591	A 1	7511	A 1
2003	A 3	2210	A 3	2350	A 2	2601	A 1	3015	A 3	3306	A 1	3452	A 2	3570	A 1	3607	A 1	6592	A 2	7540	A 1
2005	A 2	2251	A 3	2351	A 2	2602	A 1	3200	A 2	3307	A 1	3513	A 2	3571	A 1	3608	A 1	6593	A 2	7590	A 1
2007	A 3	2301	A 1	2352	A 2	2603	A 1	3201	A 2	3340	A 2	3514	A 2	3572	A 1	3609	A 1	6594	A 1	7591	A 1
2010	A 2	2302	A 2	2371	A 2	3000	A 3	3202	A 2	3341	A 2	3516	A 1	3580	A 1	6000	A 3	6595	A 1		
2030	A 3	2303	A 2	2403	A 1	3001	A 3	3203	A 3	3350	A 2	3517	A 1	3582	A 1	6550	A 2	7020	A 3		
2200	A 3	2304	A 2	2405	A 1	3002	A 3	3204	A 2	3351	A 2	3519	A 2	3600	A 1	6551	A 2	7030	A 3		
2202	A 3	2305	A 1	2570	A 1	3003	A 3	3205	A 3	3352	A 2	3520	A 2	3601	A 1	6560	A 2	7250	A 2		
2204	A 2	2306	A 1	2571	A 1	3004	A 3	3300	A 1	3353	A 2	3542	A 1	3602	A 1	6561	A 2	7340	A 2		
2206	A 3	2307	A 1	2580	A 1	3010	A 3	3301	A 2	3400	A 2	3543	A 1	3603	A 1	6570	A 1	7350	A 2		
2207	A 3	2308	A 1	2590	A 1	3011	A 3	3302	A 2	3403	A 1	3550	A 2	3604	A 1	6571	A 1	7404	A 2		


3
2
1
A
7404
7340
7250
6000
7020
7030
6560
6593
6592
6594
6591
6595
6580
7590
7511
7581
7540
6570
6571
7405
6550
6551
6561
3550
3513
3514
3519
3520

SCART2, IN/OUT, VPS, TXT BOARD MVIO-I/O-unit N3 N5

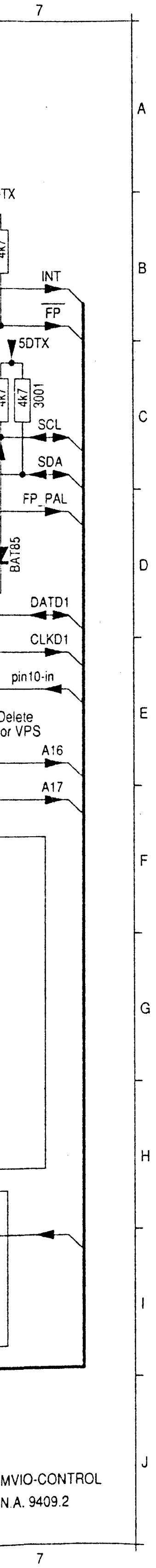

to/from VPT-Unit
to/from CO-Unit
VTX
VIDOUT
VSB
VFV
FSC
H_2
pin10
SDA
SCL
DATD1
CLKD1
INT
POR
SCART 2
VideoIn
VideoOut
red/c
green
blue
blanking
Swtching
AudInL
AudOutL
AudInR
AudOutR
7590 HEF4053BP
7591 HEF4053BP
7511 BC858B
7512 BFS19
7513 BC858B
7562 BFS19
7563 BC858B
7561 BC848B
7540 BC848B
7580 BC848B
7595 BC818-40
6551 BAV70
6561 BAV70
7600 SDA5642
SHIFTREGISTER
PICKOUT UNIT
DATA DETECTION OF 16. LINE
I2C-BUS INTERFACE
TI
PD1
INUL
VCO
IREF
FBAS
UDD
EHB
DAVN
VCS
CSO
SDA
SCL
USS
VPS-Option
(Not used, if SAA5248 is inserted!)
POS 6591, 6593, 6594 and 6595 are not used
POS 2500 not used
POS 2510 not used
POS 2560 not used
Pos 3543:Not used
MVIO1
MVIO2
MVIO3
TO FAMILY BOARD MFB2T, MFB3T - I/O CONNECTOR 1591
AOUT1
AIN1
SCRTV
ES2
BLANKING
VOUT1
VIN1
AMLP
AFV
AE12
VE12
8SC2
CLKD1
GNDD
5VAS
+12A
GAV
GAA
GNDA
-7V

..V -- Measured in PLAYBACK-Mode

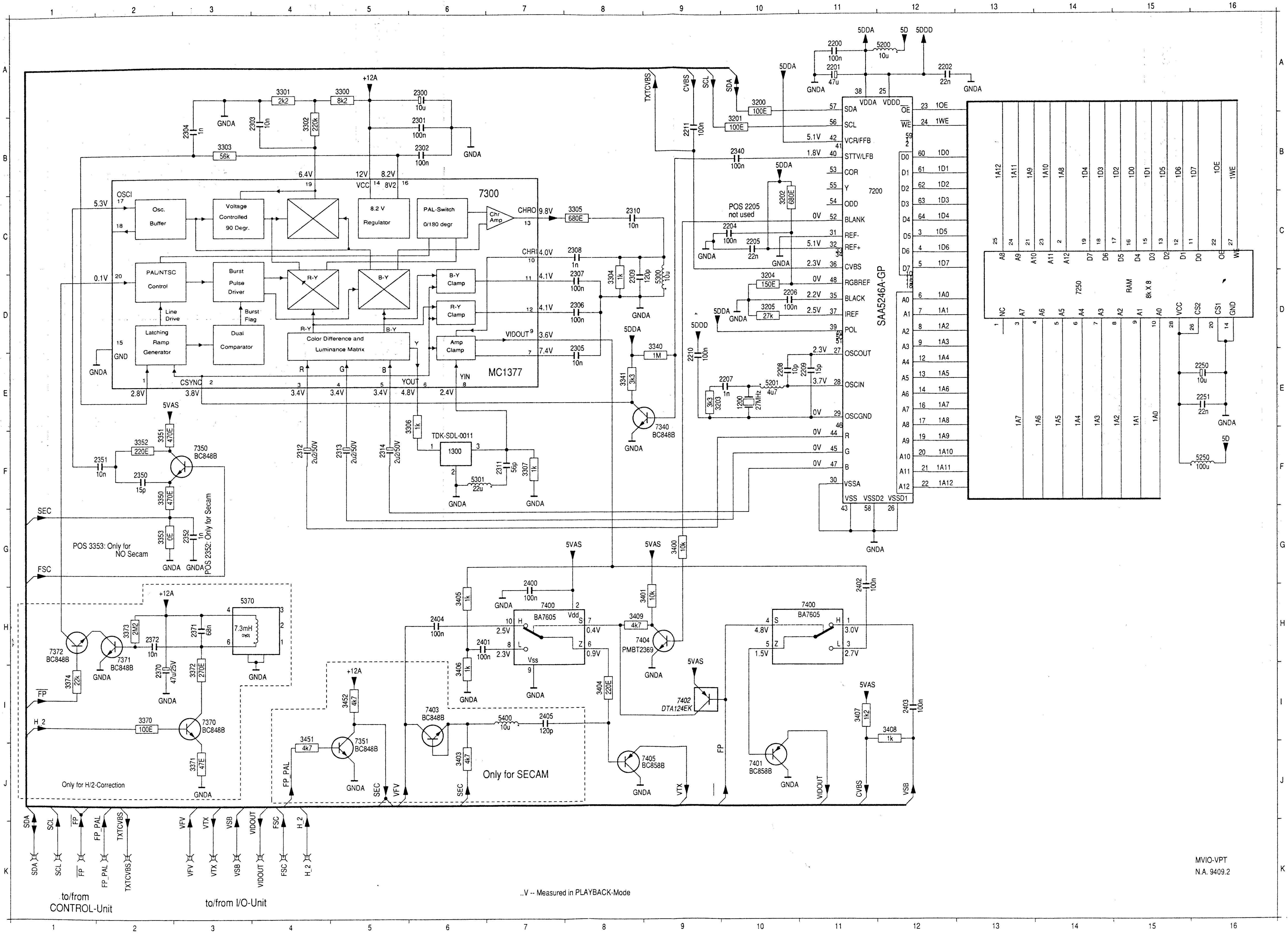
MVIO-IO
N.A. 9409.2

2500	C 5
2510	A 7
2511	B 6
2541	G13
2560	D 6
2561	E 9
2570	H 3
2571	I 3
2580	J 2
2581	J 3
2590	A 5
2591	F 8
2600	A 8
2601	B 8
2602	C 9
2603	C 9
3501	E14
3510	B 6
3511	A 6
3512	B 7
3513	A 6
3514	B 6
3515	A 5
3516	A 3
3517	A 3
3518	B 7
3519	A 7
3520	A 7
3530	F15
3541	G14
3542	G13
3543	G 9
3550	D 3
3560	E 4
3561	E 7
3562	E 7
3563	E 8
3564	E 8
3565	E 9
3566	D 8
3567	E 4
3568	F 4
3570	G 3
3571	I 3
3572	H 4
3580	J 3
3581	J 3
3582	J 4
3583	J 5
3590	I12
3600	B14
3601	A14
3602	A 8
3603	B 8
3604	B 8
3605	B 9
3606	B 9
3607	B 9
3608	A 9
3609	A 9
6550	D 3
6551	C 3
6560	E 3
6561	D13
6570	H 3
6571	I 2
6580	J 2
6590	H 4
6591	E 5
6592	G 4
6593	F 6
6594	G 5
6595	G 5
7511	B 3
7512	B 7
7513	A 7
7540	G13
7561	E13
7562	E 8
7563	D 7
7580	J 4
7590	A 4
7590	D 5
7590	E11
7591	F 8
7591	F11
7591	H 8
7595	I12
7600	A10
MVIO1	A16
MVIO2	D16
MVIO3	H16
SC2	D 1

SCART2, IN/OUT, VPS, TXT BOARD MVIO-TXT-unit N3 N5


7
INT
FP
5DTX
4k7
3001
SCL
SDA
FP_PAL
BA185
DATD1
CLKD1
pin10-in
Delete
for VPS
A16
A17
MVIO-CONTROL
N.A. 9409.2
7

1000
2001
2002
2003
2004
2005
2006
2007
2010
2020
2030
3000
3001
3002
3003
3004
3010
3011
3012
3013
3014
3015
5000
5010
5020
5030
6000
7000
7005
7010
7020
7030
CU01

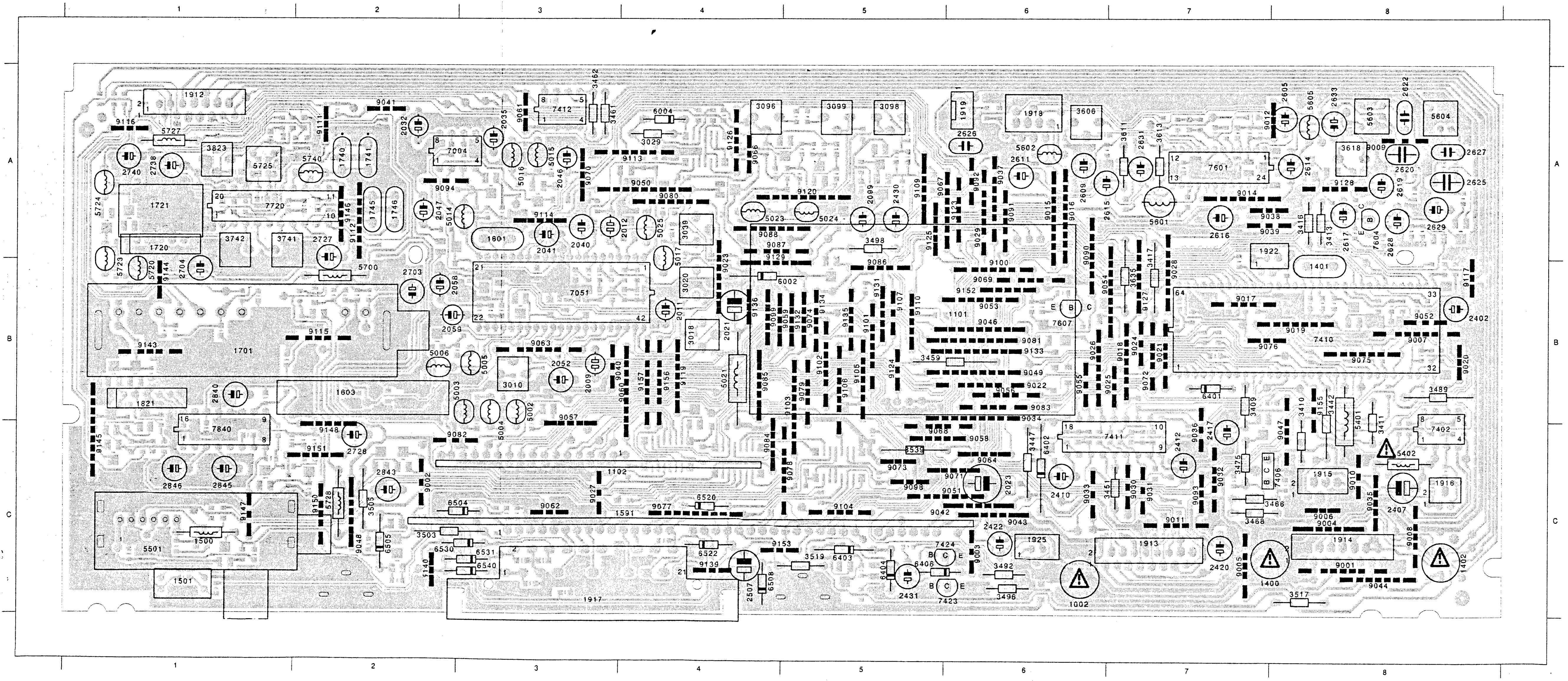

7300
MC1377
OSCI
Osc. Buffer
Voltage Controlled 90 Degr.
8.2 V Regulator
PAL-Switch 0/180 degr
Chr Amp
PAL/NTSC Control
Burst Pulse Driver
R-Y
B-Y
B-Y Clamp
R-Y Clamp
Amp Clamp
Latching Ramp Generator
Dual Comparator
Line Drive
Burst Flag
Color Difference and Luminance Matrix
CHRO
CHRI
VIDOUT
CSYNC
YOUT
YIN
GND
VCC
8V2
+12A
3301 2k2
3300 8k2
2300 10u
2301 100n
2302 100n
2303 10n
2304 1n
3302 220k
3303 56k
3305 680E
2310 10n
2308 1n
2307 100n
2306 100n
2305 10n
3304 1k
2309 120p
5300 10u
2312 2u2/50V
2313 2u2/50V
2314 2u2/50V
3306 1k
TDK-SDL-0011
1300
2311 56p
3307 1k
5301 22u
3340 1M
3341 3k3
7340 BC848B
5VAS
3351 470E
3352 220E
7350 BC848B
2351 10n
2350 15p
3350 470E
3353 0E
2352 1n
POS 3353: Only for NO Secam
POS 2352: Only for Secam
SEC
FSC
FP
H 2
5370
7.3mH
3373 2M2
2372 10n
2371 68n
2370 47u/25V
3372 270E
3374 22k
7372 BC848B
7371 BC848B
3370 100E
7370 BC848B
3371 47E
Only for H/2-Correction
3451 4k7
3452 4k7
7351 BC848B
FP_PAL
7403 BC848B
5400 10u
2405 120p
3403 4k7
Only for SECAM
3405 1k
3406 1k
2400 100n
2404 100n
2401 100n
7400 BA7605
Vdd
Vss
3409 4k7
7404 PMBT2369
3401 10k
3400 10k
3404 220E
7402 DTA124EK
7405 BC858B
7401 BC858B
3407 1k2
3408 1k
2402 100n
2403 100n
TXTCVBS
CVBS
SCL
SDA
5DDA
5D
5DDD
2200 100n
2201 47u
5200 10u
2202 22n
3200 100E
3201 100E
2340 100n
3202 680E
POS 2205 not used
2204 100n
2205 22n
3204 150E
2206 100n
3205 27k
2210 100n
2207 1n
3203 3k3
1200 27MHz
5201 4u7
2208 10p
2209 15p
7200
SAA5246A-GP
VCR/FFB
STTV/LFB
COR
ODD
BLANK
REF-
REF+
RGBREF
BLACK
IREF
POL
OSCOUT
OSCIN
OSCGND
VSSA
VDDA
VDDD
VSSD2
VSSD1
OE
WE
1OE
1WE
1D0 1D1 1D2 1D3 1D4 1D5 1D6 1D7
1A0 1A1 1A2 1A3 1A4 1A5 1A6 1A7 1A8 1A9 1A10 1A11 1A12
7250
RAM
8k X 8
NC
VCC
CS2
CS1
GND
2250 10u
2251 22n
5250 100u
GNDA
VFV
VTX
VSB
VIDOUT
to/from CONTROL-Unit
to/from I/O-Unit
MVIO-VPT
N.A. 9409.2
..V -- Measured in PLAYBACK-Mode

1200	H 9
1300	I 6
2200	C11
2201	D11
2202	D12
2204	F 9
2205	F10
2206	G10
2207	H 9
2208	H10
2209	H10
2210	G 9
2211	D 9
2250	H15
2251	H15
2300	D 5
2301	D 5
2302	E 5
2303	D 3
2304	E 2
2305	G 7
2306	G 7
2307	F 7
2308	F 7
2309	F 8
2310	F 8
2311	I 6
2312	I 4
2313	I 4
2314	I 5
2340	E 9
2350	I 2
2351	I 1
2352	J 2
2370	K 2
2371	K 2
2372	K 2
2400	J 7
2401	K 6
2402	J11
2403	
2404	K 5
2405	
3200	D10
3201	D 9
3202	E10
3203	H 9
3204	F10
3205	G10
3300	D 4
3301	D 4
3302	D 4
3303	E 3
3304	F 8
3305	F 7
3306	H 5
3307	I 7
3340	G 8
3341	H 8
3350	I 2
3351	H 2
3352	H 2
3353	J 2
3370	
3371	
3372	K 2
3373	K 2
3374	K 1
3400	J 9
3401	J 8
3403	
3404	K 8
3405	J 6
3406	K 6
3407	
3408	
3409	K 8
3451	
3452	
5200	C11
5201	H10
5250	I15
5300	F 8
5301	I 6
5370	K 3
5400	
7200	E11
7250	G14
7300	E 6
7340	H 8
7350	I 3
7351	
7370	
7371	K 2
7372	K 1
7400	K 7
7400	K10
7401	
7402	K 9
7403	
7404	K 8
7405	

FAMILY BOARD N4

"INSERTED COMPONENTS ARE DEPENDENT ON THE SET TYPE"

1002 C 6	1720 A 1	1917 C 3	2040 A 3	2417 C 7	2617 A 8	2704 B 1	3029 A 4	3447 C 6	3503 C 2	3823 A 1	5024 A 5	5723 B 1	6406 C 5	7406 C 7	9002 C 2	9015 A 6	9027 C 3	9039 A 7	9052 B 8	9064 C 6	9077 C 4	9090 A 6	9105 B 5	9119 B 4	9134 B 5	9151 C 2
1101 B 6	1721 A 1	1918 A 6	2041 A 3	2420 C 7	2619 A 8	2727 A 2	3039 A 4	3451 C 7	3505 C 2	5002 B 3	5025 A 4	5724 A 1	6504 C 3	7410 B 8	9003 C 6	9016 A 6	9028 B 7	9040 B 3	9053 B 6	9066 A 4	9078 C 5	9091 A 6	9106 B 5	9120 A 5	9135 B 5	9152 B 6
1102 C 3	1740 A 2	1919 A 6	2046 A 3	2422 C 6	2620 A 8	2728 C 2	3096 A 4	3459 B 6	3517 C 8	5003 B 3	5401 B 8	5725 A 1	6505 C 2	7411 C 7	9004 C 8	9017 B 7	9029 A 6	9041 A 2	9054 B 7	9067 A 6	9079 B 5	9092 A 6	9107 B 5	9123 A 6	9136 B 4	9153 C 4
1400 C 8	1741 A 2	1922 B 7	2047 A 2	2430 A 5	2622 A 8	2738 A 1	3098 A 5	3461 A 3	3519 C 5	5004 B 3	5402 C 8	5727 A 1	6508 C 4	7412 A 3	9005 C 7	9018 B 7	9030 C 7	9042 C 6	9055 B 6	9068 C 5	9080 A 4	9093 C 7	9109 A 5	9124 B 5	9139 C 4	9155 B 8
1401 B 8	1745 A 2	1925 C 6	2052 B 3	2431 C 5	2625 A 8	2740 A 1	3099 A 5	3462 A 3	3539 C 5	5005 B 3	5501 C 1	5728 C 2	6520 C 4	7423 C 6	9006 C 8	9019 B 8	9031 C 7	9043 C 6	9056 B 6	9069 B 6	9081 B 6	9094 A 2	9110 B 5	9125 A 5	9140 C 2	9156 B 4
1402 C 8	1746 A 2	2009 B 3	2058 B 2	2507 C 4	2626 A 6	2840 B 1	3409 B 7	3466 C 7	3606 A 6	5006 B 2	5601 A 7	5740 A 2	6522 C 4	7424 C 6	9007 B 8	9020 B 8	9032 C 7	9044 C 8	9057 C 3	9070 A 3	9082 C 2	9098 C 5	9111 A 2	9126 A 4	9143 B 1	9157 B 4
1500 C 1	1821 B 1	2011 B 4	2059 B 2	2605 A 8	2627 A 8	2843 C 2	3410 C 8	3468 C 7	3611 A 7	5014 A 3	5602 A 6	6002 B 4	6530 C 3	7601 A 7	9008 C 8	9021 B 7	9033 C 6	9046 B 6	9058 C 5	9071 C 6	9083 B 6	9099 B 4	9112 A 2	9127 B 7	9144 B 1	
1501 C 1	1912 A 1	2012 A 3	2099 A 5	2609 A 6	2628 A 8	2845 C 1	3411 B 8	3475 C 7	3613 A 7	5015 A 3	5603 A 8	6004 A 4	6531 C 3	7604 A 8	9009 A 8	9022 B 6	9034 B 6	9047 C 8	9059 B 4	9072 B 7	9084 C 4	9100 B 6	9113 A 4	9128 A 8	9145 C 1	
1591 C 3	1913 C 7	2021 B 4	2402 B 8	2611 A 6	2629 A 8	2846 C 1	3413 A 8	3489 B 8	3618 A 8	5016 A 3	5604 A 8	6401 B 7	6540 C 3	7607 B 6	9010 C 8	9023 B 4	9035 C 8	9048 C 2	9060 B 4	9073 C 5	9085 B 4	9101 B 5	9114 A 3	9129 B 4	9146 A 2	
1601 A 3	1914 C 8	2023 C 6	2407 C 8	2614 A 8	2631 A 7	3010 B 3	3416 A 8	3492 C 6	3635 B 7	5017 A 4	5605 A 8	6402 C 6	7004 A 2	7720 A 1	9011 C 7	9024 B 7	9036 C 7	9049 B 6	9061 A 3	9074 B 5	9086 B 5	9102 B 5	9115 B 2	9131 B 5	9147 C 1	
1603 B 2	1915 C 8	2032 A 2	2410 C 6	2615 A 6	2633 A 8	3018 B 4	3417 B 7	3496 C 6	3741 A 1	5021 B 4	5700 B 2	6403 C 5	7051 B 3	7840 C 1	9012 A 8	9025 B 7	9037 A 6	9050 A 4	9062 C 3	9075 B 8	9087 A 4	9103 B 5	9116 A 1	9132 B 5	9148 C 2	
1701 B 1	1916 C 8	2035 A 3	2412 C 7	2616 A 7	2703 B 2	3020 B 4	3442 C 8	3498 A 5	3742 A 1	5023 A 4	5720 B 1	6404 C 5	7402 C 8	9001 C 8	9014 A 7	9026 B 6	9038 A 7	9051 C 6	9063 B 3	9076 B 7	9088 A 4	9104 C 5	9117 B 8	9133 B 6	9150 C 2	



FAMILY BOARD N4

"INSERTED COMPONENTS ARE DEPENDENT ON THE SET TYPE"

2000	A 5
2001	B 3
2002	C 3
2003	C 3
2004	B 3
2010	B 2
2013	B 3
2014	B 3
2015	A 4
2017	A 4
2018	A 4
2019	B 4
2020	B 4
2025	A 2
2027	A 4
2028	A 3
2029	A 3
2033	A 5
2034	A 2
2038	A 4
2039	A 3
2042	A 3
2043	B 3
2045	A 3
2048	B 2
2050	A 2
2055	B 3
2056	B 3
2057	B 3
2061	B 3
2063	B 2
2073	B 3
2076	A 5
2079	A 4
2080	A 5
2081	A 4
2088	B 3
2090	A 5
2095	A 4
2096	A 4
2098	B 2
2101	A 5
2106	A 5
2403	B 7
2404	B 8
2405	B 8
2406	B 8
2408	C 8
2409	C 8
2411	C 6
2413	C 7
2414	C 7
2415	C 7
2416	B 8
2418	B 7
2419	B 8
2421	C 6
2423	B 7
2424	A 3
2428	A 7
2504	C 5
2505	C 1
2506	C 3
2530	C 3
2531	C 3
2540	C 3
2600	A 7
2601	A 7
2602	A 7
2604	A 7
2606	A 6
2607	A 7
2608	A 7
2610	A 6
2612	A 7
2613	A 7
2618	A 8
2621	A 8
2623	B 6
2624	A 8
2632	A 7
2700	B 1
2701	B 1
2702	B 2
2720	B 1
2721	A 1
2722	A 1
2725	A 1
2726	C 1
2736	A 1
2737	A 2
2739	A 1
2741	A 1
2820	A 1
2821	A 2
2822	A 1
2823	C 1
2824	A 1
2834	B 1
2841	C 1
2842	C 1
2844	C 1
3001	B 3
3002	C 3
3008	B 3
3011	B 4
3012	B 3
3017	B 4
3019	B 4
3021	B 3
3022	B 3
3023	B 3
3025	A 4
3026	A 4
3028	A 4
3030	B 3
3031	A 4
3033	A 4
3034	A 4
3036	B 4
3037	B 4
3038	B 4
3040	A 3
3041	B 5
3043	A 3
3044	A 3
3045	A 3
3046	A 3
3051	A 4
3052	A 2
3054	A 4
3055	B 3
3059	A 5
3060	B 2
3061	B 3
3062	B 2
3063	B 2
3064	B 2
3089	A 4
3090	A 5
3091	A 5
3092	A 5
3093	A 5
3094	A 4
3095	A 5
3097	A 5
3100	A 5
3104	A 5
3105	A 5
3106	A 5
3116	B 8
3117	B 3
3118	B 5
3119	B 3
3128	A 4
3132	A 5
3135	A 3
3136	A 3
3137	A 5
3138	A 4
3400	C 8
3401	B 8
3402	B 8
3408	B 8
3412	B 8
3414	B 8
3415	B 6
3418	B 8
3419	B 8
3420	B 8
3422	B 8
3423	B 7
3424	B 8
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3426	B 8
3429	B 8
3430	B 7
3431	B 5
3432	B 7
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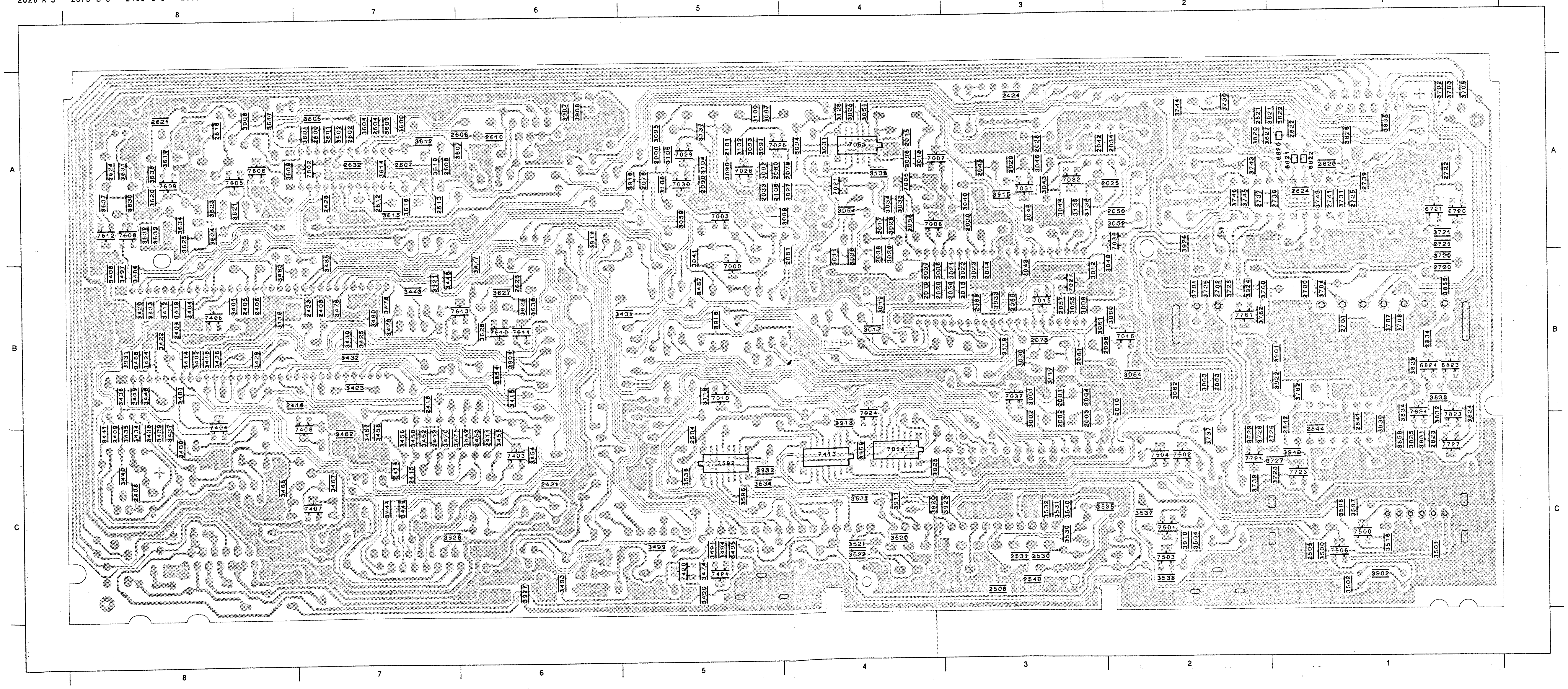
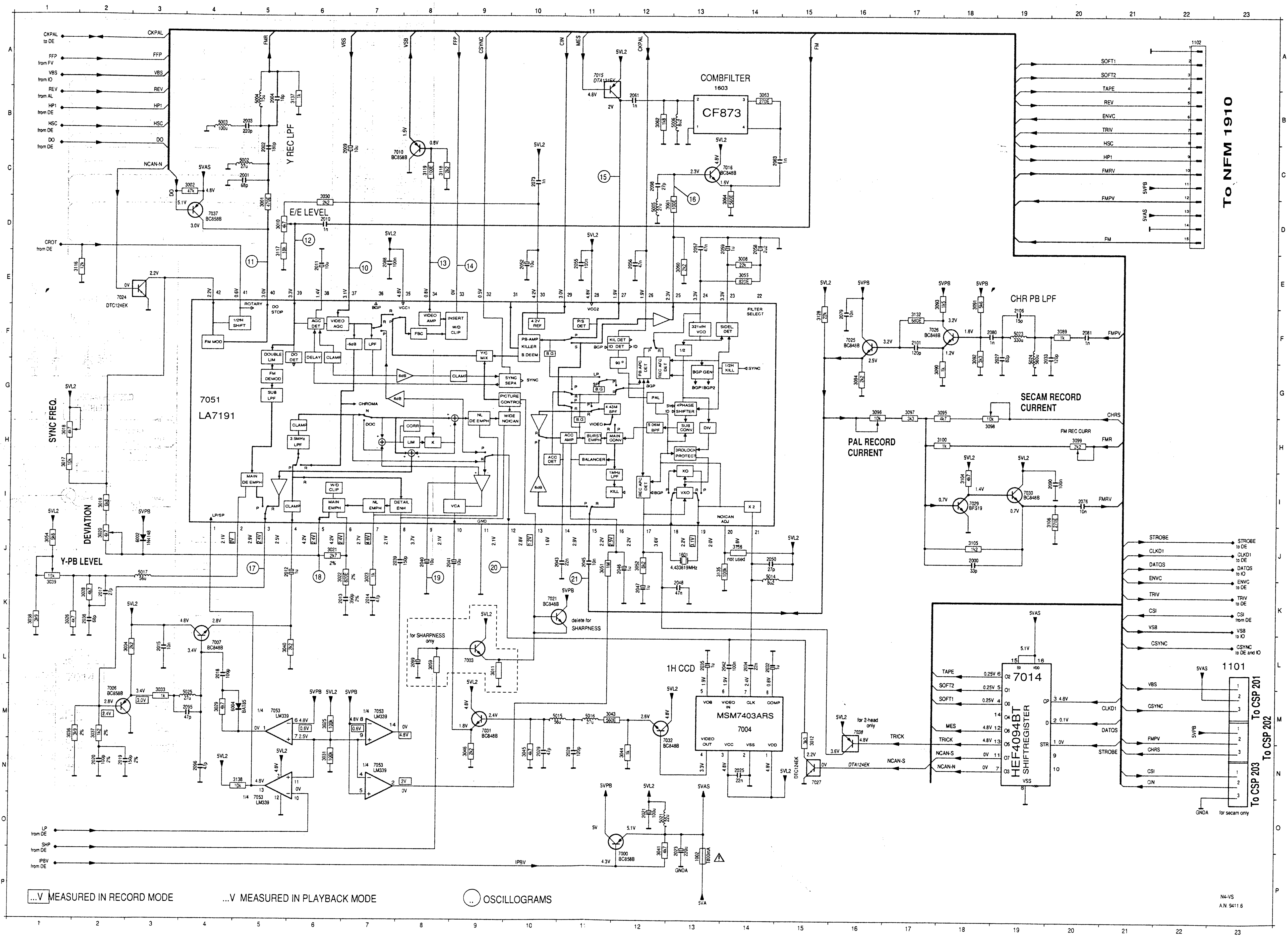
3434	C 8
3435	C 8
3436	B 8
3437	C 8
3438	C 8
3439	C 8
3440	C 8
3441	C 8
3443	B 7
3444	C 7
3445	C 7
3446	B 7
3448	B 8
3449	C 6
3450	C 7
3452	C 7
3453	C 6
3454	C 6
3455	C 6
3456	C 7
3457	C 7
3458	C 7
3465	C 8
3467	C 7
3470	C 7
3471	C 7
3474	C 5
3476	B 7
3477	B 6
3478	B 7
3479	B 7
3480	B 7
3481	B 8
3482	C 7
3483	B 8
3484	B 8
3485	B 7
3486	B 8
3487	B 5
3488	B 8
3490	C 5
3491	C 5
3493	C 6
3494	C 5
3495	C 5
3497	B 8
3499	C 5
3500	C 1
3501	C 1
3502	C 1
3504	C 2
3506	C 1
3516	C 1
3520	C 4
3521	C 4
3522	C 4
3530	C 3
3531	C 3
3532	C 3
3533	C 4
3534	C 5
3535	C 3
3536	C 5
3537	C 2
3538	C 2
3540	C 3
3596	C 5
3597	C 1
3600	A 7
3601	A 7
3602	A 7
3603	A 7
3604	A 7
3605	A 7
3607	A 6
3608	A 8
3610	A 7
3612	A 7
3614	A 7
3615	A 7
3616	A 7
3617	A 8
3619	A 8
3620	A 8
3621	A 8
3623	A 8
3624	A 8
3625	A 8
3626	B 6
3627	B 6
3628	B 6
3630	A 8
3631	A 8
3632	A 8
3633	A 8
3634	A 8
3636	B 6
3637	A 8
3638	A 8
3701	B 2
3702	A 1
3703	A 1
3704	B 1
3705	A 1
3707	B 1
3708	B 1
3720	B 1
3721	A 1
3723	C 1
3725	B 2
3726	B 2
3727	C 1
3728	C 2
3729	C 2
3730	A 2
3731	A 1
3737	C 2
3739	C 2
3743	A 2
3744	A 2
3745	A 2
3746	A 2
3749	A 1
3760	B 2
3762	B 2
3782	B 1
3820	A 2
3821	A 1
3822	A 1
3824	C 1
3825	C 1
3826	A 1
3827	A 2
3829	B 1
3831	C 1
3832	C 1
3833	B 1
3834	C 1
3835	A 1
3854	B 6
3855	B 1
3858	C 1
3859	C 4
3901	B 1
3902	C 1
3904	B 6
3906	A 8
3907	A 6
3908	A 6
3910	C 2
3911	C 4
3913	C 4
3914	A 6
3915	A 3
3916	A 5
3918	B 5
3920	C 4
3921	B 7
3922	B 1
3923	C 3
3924	B 2
3925	C 4
3926	A 2
3927	C 6
3928	C 7
3930	C 1
3931	B 8
3932	C 5
3933	B 3
3940	C 1
6720	A 1
6721	A 1
6820	A 1
6821	A 1
6822	A 1
6823	B 1
6824	B 1
7000	B 5
7003	A 5
7005	A 4
7006	A 4
7007	A 4
7010	B 5
7014	C 4
7015	B 3
7016	B 2
7021	A 4
7024	B 4
7025	A 5
7026	A 5
7027	B 3
7029	A 5
7030	A 5
7031	A 3
7032	A 3
7037	B 3
7038	A 2
7053	A 4
7403	C 6
7404	C 8
7405	B 8
7407	C 7
7408	C 7
7413	C 4
7420	C 5
7421	C 5
7500	C 1
7501	C 2
7502	C 2
7503	C 2
7504	C 2
7506	C 1
7592	C 5
7602	A 7
7605	A 8
7606	A 8
7608	A 8
7609	A 8
7610	B 6
7611	B 6
7612	A 8
7613	B 6
7721	C 2
7723	C 1
7727	C 1
7761	B 2
7823	C 1
7824	B 1



FAMILY BOARD VIDEOSIGNALPROCESSING - VS N4

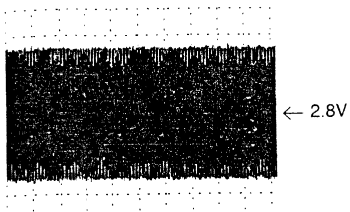

CKPAL to DE
FFP from FV
VBS from IO
REV from AL
HP1 from DE
HSC from DE
DO from DE
NCAN-N
CROT from DE
FMR
VBS
VSB
FFP
CSYNC
CIN
MES
CKPAL
FM
5VL2
5VAS
5VPB
Y REC LPF
E/E LEVEL
COMBFILTER
1603
CF873
7015 DTA124EK
7016 BC848B
7010 BC858B
7037 BC858B
7024 DTC124EK
7051
LA7191
ROTARY
1/2H SHIFT
FM MOD
DO STOP
AGC DET
VIDEO AGC
VIDEO AMP
INSERT
W/D CLIP
FBC
Y/C MIX
PB-AMP KILLER
B DEEM
P/S DET
4.2V REF
DOUBLE LIM
DO DET
DELAY
CLAMP
LPF
FM DEMOD
SUB LPF
SYNC SEPA
PICTURE CONTROL
NL DE EMPH
WIDE NOICAN
CHROMA
DOC
CORR
LIM
K
3.5MHz LPF
MAIN DE EMPH
W/D CLIP
MAIN EMPH
NL EMPH
DETAIL ENH
VCA
321xfH VCO
SIDEL DET
FILTER SELECT
KIL DET
ID DET
1/2
BGP GEN
1/2H KILL
PAL
4.43M BPF
4PHASE SHIFTER
5.06M BPF
SUB CONV
DIV
ACC AMP
BURST EMPH
MAIN CONV
ACC DET
BALANCER
1MHz LPF
KILL
3RDLOCH PROTECT
XO
VXO
REC APC DET
REC AFC DET
PB APC DET
NOICAN ADJ
X 2
GND
LP/SP
SYNC FREQ.
DEVIATION
Y-PB LEVEL
7007 BC848B
7006 BC858B
6004 BA185
7053 LM339
7003
for SHARPNESS only
7021 BC848B
delete for SHARPNESS
7031 BC848B
7032 BC848B
1H CCD
MSM7403ARS
7004
7000 BC858B
1601 4.433619MHz
not used
1002 800mA
7027 DTC124EK
7038 for 2-head only
TRICK
NCAN-S
DTA124EK
CHR PB LPF
7025 BC848B
7026 BC848B
SECAM RECORD CURRENT
PAL RECORD CURRENT
FM REC CURR
CHRS
FMR
FMRV
FMPV
7029 BFS19
7030 BC848B
1102
SOFT1
SOFT2
TAPE
REV
ENVC
TRIV
HSC
HP1
FMRV
FMPV
FM
To NFM 1910
STROBE to DE
CLKD1 to DE
DATOS to IO
ENVC to DE
TRIV to DE
CSI from DE
VSB to IO
CSYNC to DE and IO
7014
HEF4094BT SHIFTREGISTER
CP
D
STR
MES
1101
VBS
CSYNC
CLKD1
DATOS
FMPV
CHRS
CSI
CIN
STROBE
To CSP 201
To CSP 202
To CSP 203
GNDA
for secam only
LP from DE
SHP from DE
IPBV from DE
IPBV
5VA
...V MEASURED IN RECORD MODE
...V MEASURED IN PLAYBACK MODE
OSCILLOGRAMS
N4-VS
A.N 9411 6

1002	P14
1101	
1102	A23
1601	J14
1603	A15
2000	J19
2001	C 6
2002	C 6
2003	B 6
2004	B 6
2009	C 8
2010	D 7
2011	E 7
2012	J 7
2013	K 8
2014	K 8
2015	L 4
2017	K 3
2018	L 5
2019	N 4
2020	N 3
2021	O13
2023	P14
2025	N15
2027	F20
2028	N12
2029	N11
2032	L16
2033	F21
2034	L15
2035	L14
2038	K 3
2039	J 9
2040	J 9
2041	J10
2042	L15
2043	J12
2045	J12
2046	J13
2047	K13
2048	K14
2050	J16
2052	E11
2055	E12
2056	E13
2057	D14
2058	D15
2059	D15
2061	B13
2063	C16
2073	C11
2076	I21
2079	F17
2080	F20
2081	F21
2088	E 8
2090	I21
2095	M 5
2096	N 5
2098	C13
2099	L 9
2101	F18
2106	F20
3001	D 6
3002	C 5
3008	E15
3010	D 6
3011	L10
3012	M16
3017	H 2
3018	H 2
3019	I 3
3020	J 3
3021	J 7
3022	K 8
3023	K 8
3025	M 7
3026	K 3
3028	K 3
3029	M 5
3030	D 7
3031	N 7
3033	M 4
3034	L 4
3036	M 3
3037	M 3
3038	K 2
3039	K 2
3040	L 7
3041	P14
3043	M13
3044	N13
3045	N11
3046	N10
3051	J12
3052	J13
3054	J 2
3055	E15
3059	L 9
3060	E14
3061	D14
3062	B13
3063	B15
3064	D15
3089	F21
3090	G19
3091	E19
3092	F19
3093	E19
3094	G17
3095	G19
3096	G18
3097	G18
3098	H20
3099	H21
3100	H19
3104	I19
3105	J19
3106	I21
3116	E 3
3117	E 6
3118	C 9
3119	C 9
3128	F16
3132	F18
3135	J15
3136	J15
3137	B 7
3138	N 6
5002	C 6
5003	B 5
5004	B 6
5005	D13
5006	B14
5014	J16
5015	M12
5016	M12
5017	J 4
5021	O14
5023	F20
5024	F20
5025	M 5
6002	J 4
6004	M 6
7000	P13
7003	L10
7004	M15
7006	M 3
7007	L 5
7010	C 9
7014	L20
7015	A12
7016	C15
7021	K12
7024	E 3
7025	F17
7026	F19
7027	N17
7029	I19
7030	I20
7031	M10
7032	M14
7037	D 5
7038	M17
7051	G 5
7053	N 8
7053	M 7
7053	M 8
7053	O 6

OSCILLOGRAMS VIDEOSIGNALPROCESSING -VS

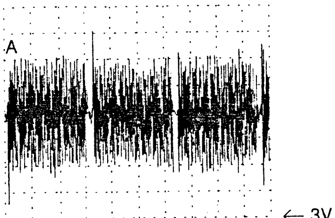
Unless otherwise indicated measured in position record.

A: AC, 0.2 V/Div , 2 us/Div



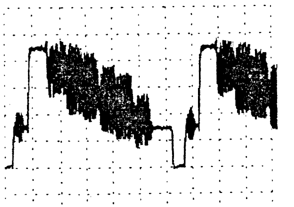
IC 7051 Pin 40 Osc.11

A: AC, 50 mV/Div , 20 us/Div



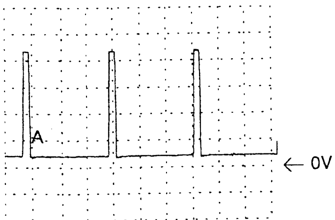
IC 7051 Pin 39 Osc.12
(measured in playback)

A: DC, 0.5 V/Div 10 us/Div



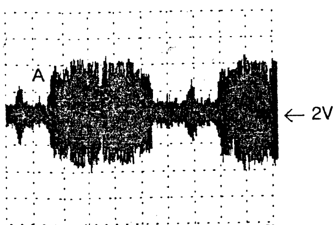
IC 7051 Pin 3 Osc.13
VSB(meas. in playback)

A: DC, 1.0 V/Div , 20 us/Div



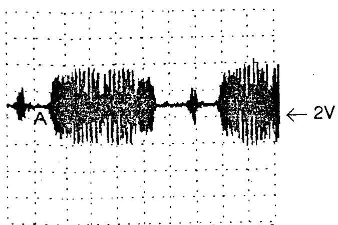
IC 7051 Pin 32 Osc.14

A: AC, 50 mV/Div , 5 ms/Div



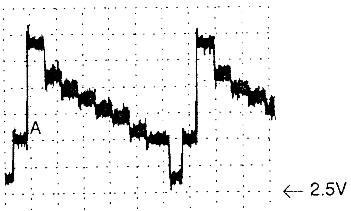
IC 7051 Pin 27 Osc.15
(measured in playback)

A: DC, 0.5 V/Div , 10 us/Div



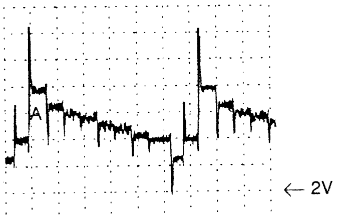
IC 7051 Pin 25 Osc.16
(measured in playback)

A: AC, 0.1 V/Div , 10 us/Div



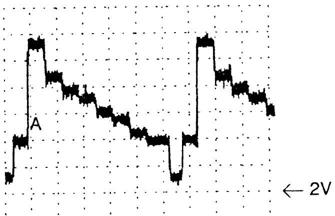
IC 7501 Pin 3 Osc.17

A: DC, 0.2 V/Div , 10 us/Div



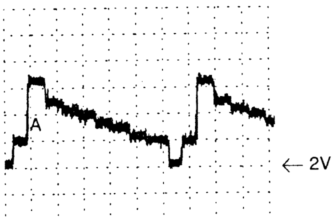
IC 7051 Pin 5 Osc.18

A: AC, 0.1 V/Div , 10 us/Div



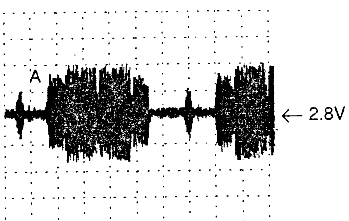
IC 7051 Pin 10 Osc.19
(measured in playback)

A: AC, 0.1 V/Div , 10 us/Div



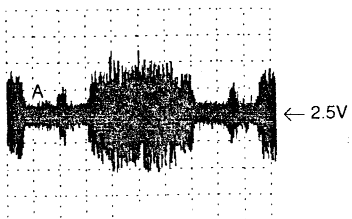
IC 7051 Pin 12 Osc.20
(measured in playback)

A: AC, 0.1 V/Div , 10 us/Div



IC 7051 Pin 15 Osc.21

A: AC, 0.2 V/Div , 10 us/Div

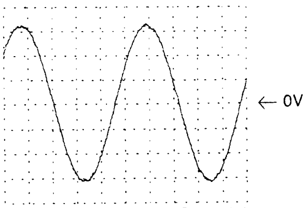


IC 7051 Pin 15 Osc.21
(measured in playback)

OSCILLOGRAMS AUDIO LINEAR -AL

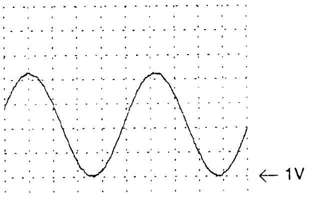
Unless otherwise indicated measured in position record.

A: DC, 0.2 V/Div, 0.2 ms/Div



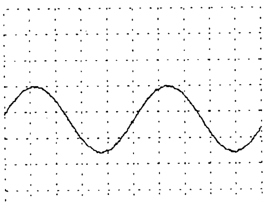
Capacitor 2611 Osc.31
AMLP

A: DC, 0.2 V/Div, 0.2 ms/Div



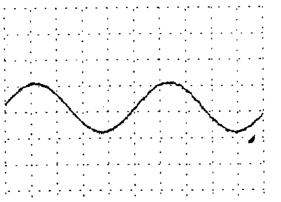
Resistor 3611 Osc.32
AMLR

A: DC, 0.5 V/Div, 0.2 ms/Div



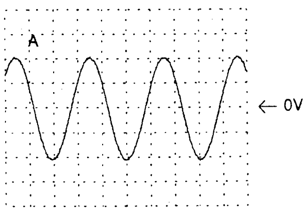
IC 7601 Pin 13 Osc.33

A: DC, 1 V/Div, 0.2 ms/Div



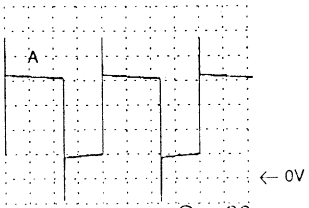
IC 7601 Pin 17 Osc.34

A: DC, 0.1 V/Div, 5 us/Div



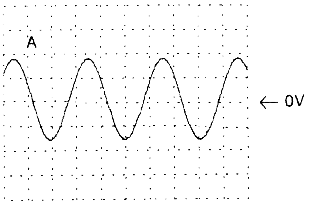
Connector F7,2 Osc.35
Main erase head (MEH1)

A: DC, 1 V/Div, 10 ms/Div



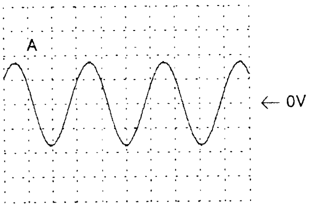
Connector F8,1 Osc.36
CTL1

A: DC, 20 V/Div, 5 us/Div



Connector F8,3 Osc.37
Audio erase head (AEH1)

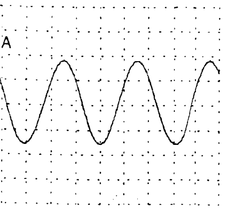
A: DC, 10 V/Div, 5 us/Div



Connector F8,7 Osc.38
Audio R/P Head (ARH)

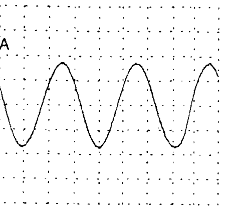
ed in position record.

DC, 20 V/Div, 5 us/Div



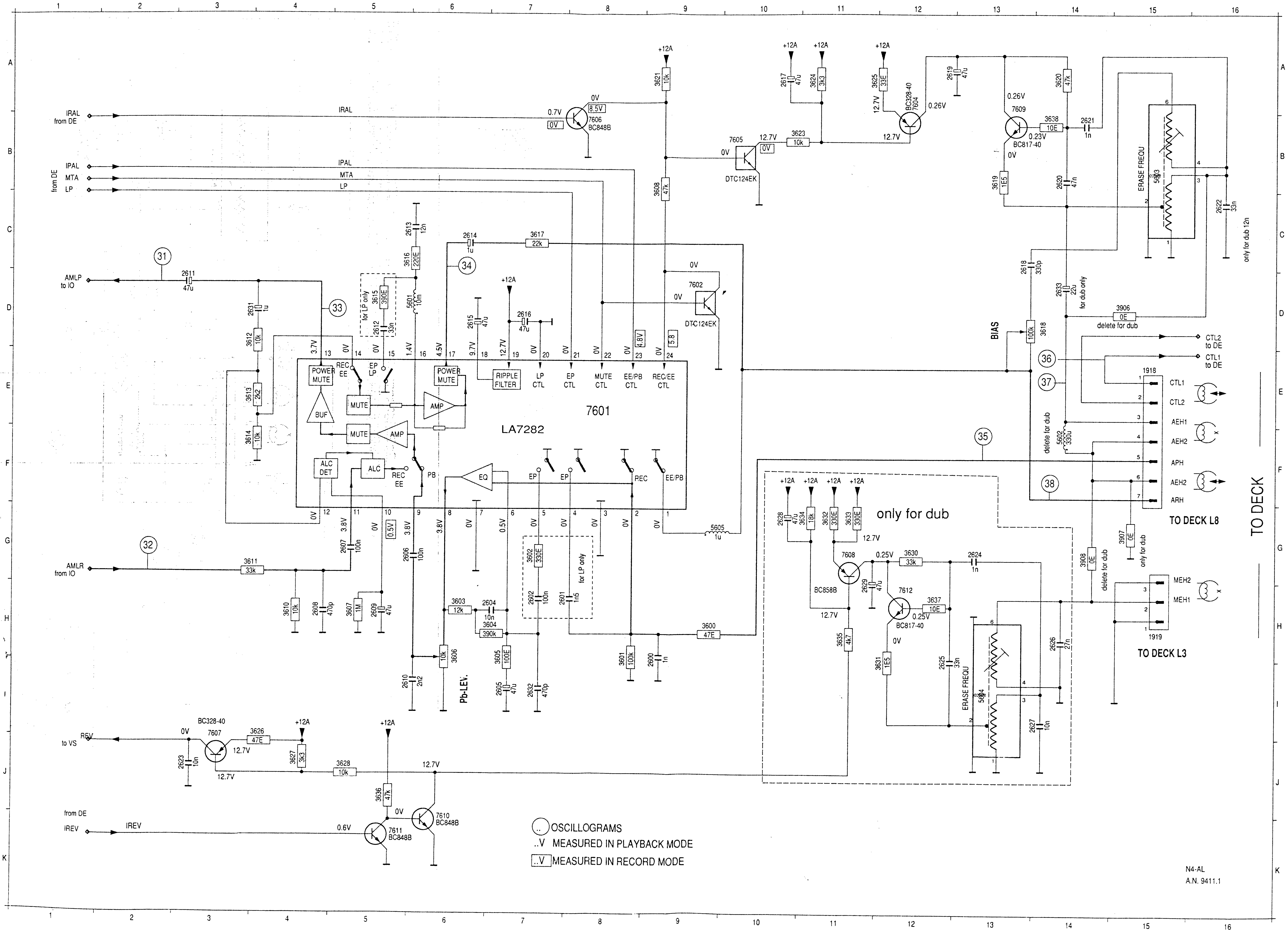
nnector F8,3 Osc.37
dio erase head (AEH1)

DC, 10 V/Div, 5 us/Div



nnector F8,7 Osc.38
dio R/P Head (ARH)

FAMILY BOARD AUDIO LINEAR - AL

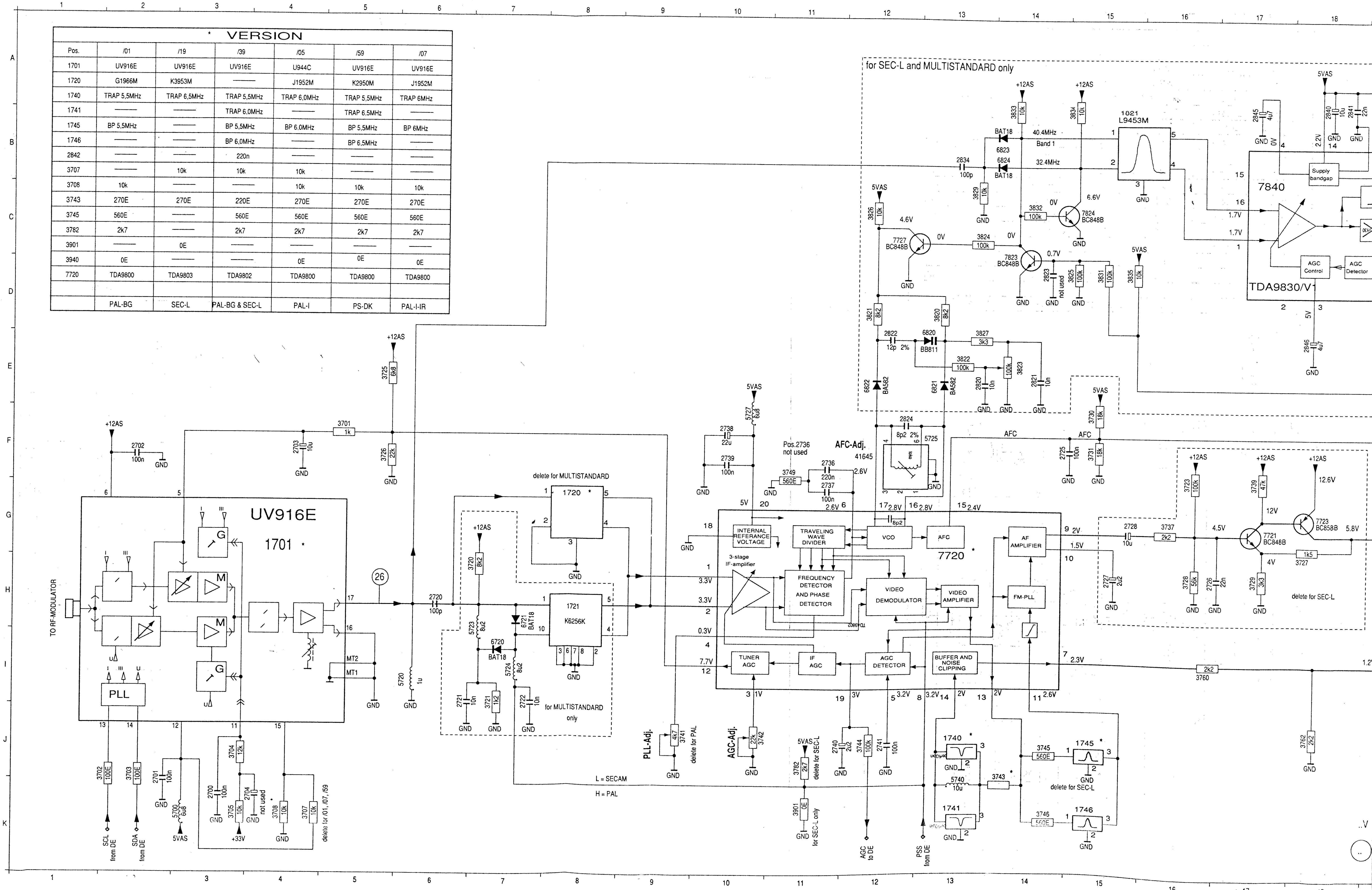

IRAL from DE
IPAL
MTA
LP
from DE
AMLP to IO
AMLR from IO
REV to VS
from DE IREV
LA7282
7601
POWER MUTE
BUF
MUTE
AMP
ALC DET
ALC
EQ
RIPPLE FILTER
LP CTL
EP CTL
MUTE CTL
EE/PB CTL
REC/EE CTL
REC EE
EP LP
PB
REC
EE/PB
for LP only
only for dub
delete for dub
for dub only
only for dub 12n
BIAS
ERASE FREQU
Pb-LEV.
CTL2 to DE
CTL1 to DE
CTL1
CTL2
AEH1
AEH2
APH
ARH
1918
TO DECK L8
MEH2
MEH1
1919
TO DECK L3
TO DECK
7602 DTC124EK
7605 DTC124EK
7604 BC328-40
7606 BC848B
7607 BC328-40
7608 BC858B
7609 BC817-40
7610 BC848B
7611 BC848B
7612 BC817-40
+12A
31
32
33
34
35
36
37
38
N4-AL
A.N. 9411.1

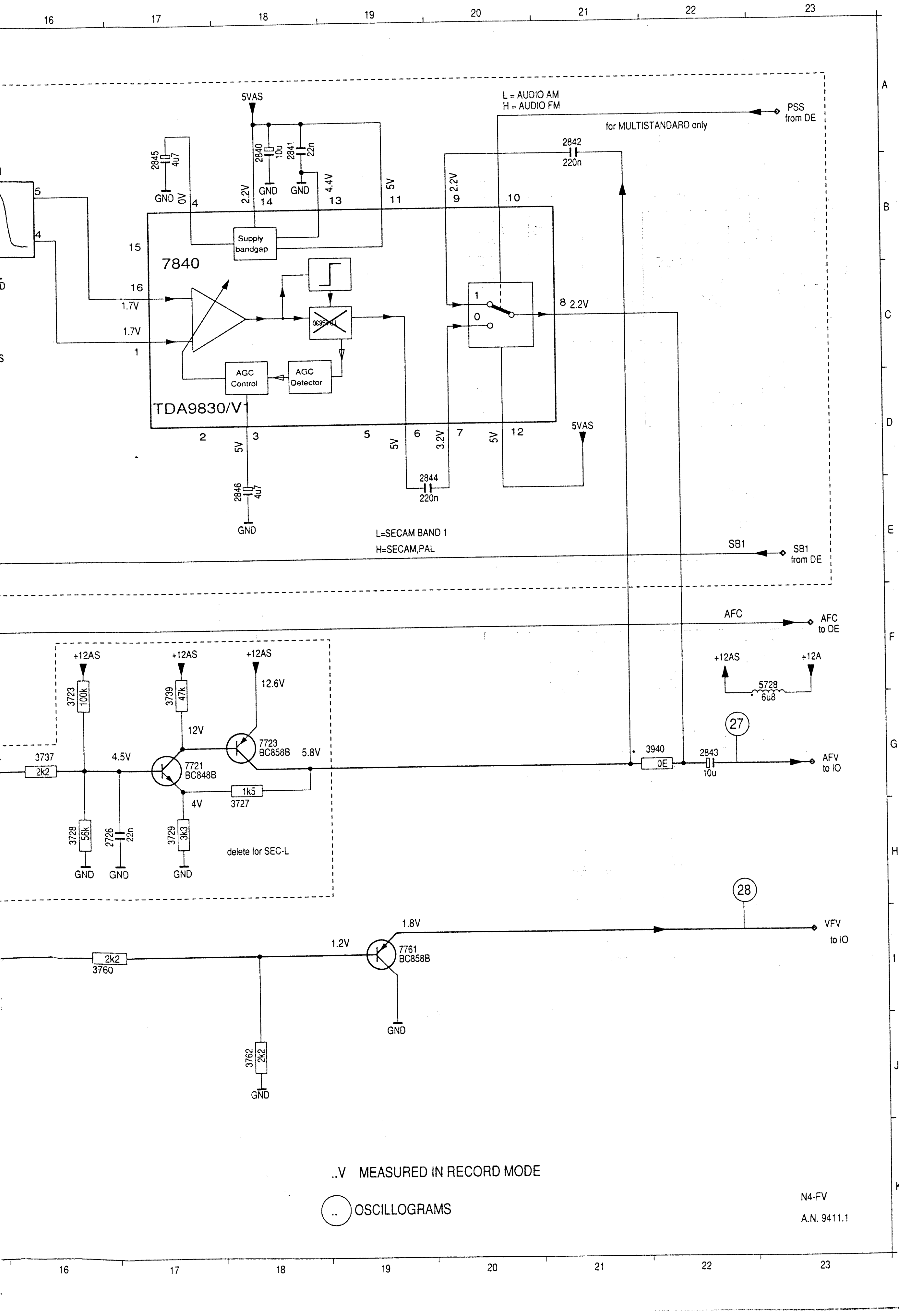
◯ OSCILLOGRAMS
..V MEASURED IN PLAYBACK MODE
☐..V MEASURED IN RECORD MODE

1918	E15
1919	H15
2600	H 9
2601	H 7
2602	H 7
2604	H 7
2605	I 7
2606	G 5
2607	G 5
2608	H 4
2609	H 5
2610	I 5
2611	D 3
2612	D 5
2613	C 5
2614	C 6
2615	D 6
2616	D 7
2617	A10
2618	C13
2619	A12
2620	B14
2621	B14
2622	C16
2623	J 3
2624	G13
2625	I12
2626	H14
2627	I14
2628	G10
2629	H11
2631	D 3
2632	I 7
2633	D14
3600	H 9
3601	H 8
3602	G 7
3603	H 6
3604	H 7
3605	H 7
3606	H 6
3607	H 5
3608	B 9
3610	H 4
3611	G 3
3612	D 3
3613	E 3
3614	F 3
3615	D 5
3616	C 5
3617	C 7
3618	D14
3619	B13
3620	A14
3621	A 9
3623	B10
3624	A11
3625	A11
3626	I 4
3627	J 4
3628	J 5
3630	G12
3631	I12
3632	G11
3633	G11
3634	G11
3635	H11
3636	J 5
3637	H12
3638	B14
3906	D15
3907	G15
3908	G14
5601	D 6
5602	F14
5603	B15
5604	I13
5605	G 9
7601	E 8
7602	D 9
7604	A12
7605	B10
7606	B 8
7607	I 3
7608	G11
7609	A13
7610	K 6
7611	K 5
7612	H12

FAMILY BOARD FRONT END - FV N4

* VERSION						
Pos.	/01	/19	/39	/05	/59	/07
1701	UV916E	UV916E	UV916E	U944C	UV916E	UV916E
1720	G1966M	K3953M	———	J1952M	K2950M	J1952M
1740	TRAP 5,5MHz	TRAP 6,5MHz	TRAP 5,5MHz	TRAP 6,0MHz	TRAP 5,5MHz	TRAP 6MHz
1741	———	———	TRAP 6,0MHz	———	TRAP 6,5MHz	———
1745	BP 5,5MHz	———	BP 5,5MHz	BP 6,0MHz	BP 5,5MHz	BP 6MHz
1746	———	———	BP 6,0MHz	———	BP 6,5MHz	———
2842	———	———	220n	———	———	———
3707	———	10k	10k	10k	———	———
3708	10k	———	———	10k	10k	10k
3743	270E	270E	220E	270E	270E	270E
3745	560E	———	560E	560E	560E	560E
3782	2k7	———	2k7	2k7	2k7	2k7
3901	———	0E	———	———	———	———
3940	0E	———	———	0E	0E	0E
7720	TDA9800	TDA9803	TDA9802	TDA9800	TDA9800	TDA9800
	PAL-BG	SEC-L	PAL-BG & SEC-L	PAL-I	PS-DK	PAL-I-IR


for SEC-L and MULTISTANDARD only
UV916E
1701
PLL
TO RF-MODULATOR
SCL from DE
SDA from DE
5VAS
+33V
+12AS
26
1720
1721
K6256K
delete for MULTISTANDARD
for MULTISTANDARD only
L = SECAM
H = PAL
delete for /01, /07, /59
not used
INTERNAL REFERANCE VOLTAGE
TRAVELING WAVE DIVIDER
VCO
AFC
3-stage IF-amplifier
FREQUENCY DETECTOR AND PHASE DETECTOR
VIDEO DEMODULATOR
VIDEO AMPLIFIER
AF AMPLIFIER
FM-PLL
TUNER AGC
IF AGC
AGC DETECTOR
BUFFER AND NOISE CLIPPING
7720
AFC-Adj.
Pos.2736 not used
PLL-Adj.
delete for PAL
AGC-Adj.
delete for SEC-L
for SEC-L only
AGC to DE
PSS from DE
1740
1741
1745
1746
delete for SEC-L
1821
L9453M
40.4MHz Band 1
32.4MHz
BAT18
BB811
BA582
BC848B
BC858B
7840
TDA9830/V1
Supply bandgap
AGC Control
AGC Detector
AFC
GND


5VAS
L = AUDIO AM
H = AUDIO FM
PSS
from DE
for MULTISTANDARD only
2842
220n
2845
4u7
2840
10u
2841
22n
GND
0V
2.2V
4.4V
5V
2.2V
4
14
13
11
9
10
5
4
15
16
1
1.7V
1.7V
Supply
bandgap
7840
1
0
8 2.2V
AGC
Control
AGC
Detector
TDA9830/V1
2
3
5
6
7
12
5V
5V
3.2V
5V
5VAS
2846
4u7
2844
220n
GND
L=SECAM BAND 1
H=SECAM,PAL
SB1
SB1
from DE
AFC
AFC
to DE
+12AS
+12AS
+12AS
+12AS
+12A
3723
100k
3739
47k
12.6V
12V
5728
6u8
7723
BC858B
5.8V
3737
2k2
4.5V
7721
BC848B
3940
0E
2843
10u
27
AFV
to IO
1k5
3727
4V
3728
56k
2726
22n
3729
3k3
delete for SEC-L
GND
28
1.8V
VFV
to IO
1.2V
7761
BC858B
2k2
3760
3762
2k2
16
17
18
19
20
21
22
23
A
B
C
D
E
F
G
H
I
J
K

..V MEASURED IN RECORD MODE

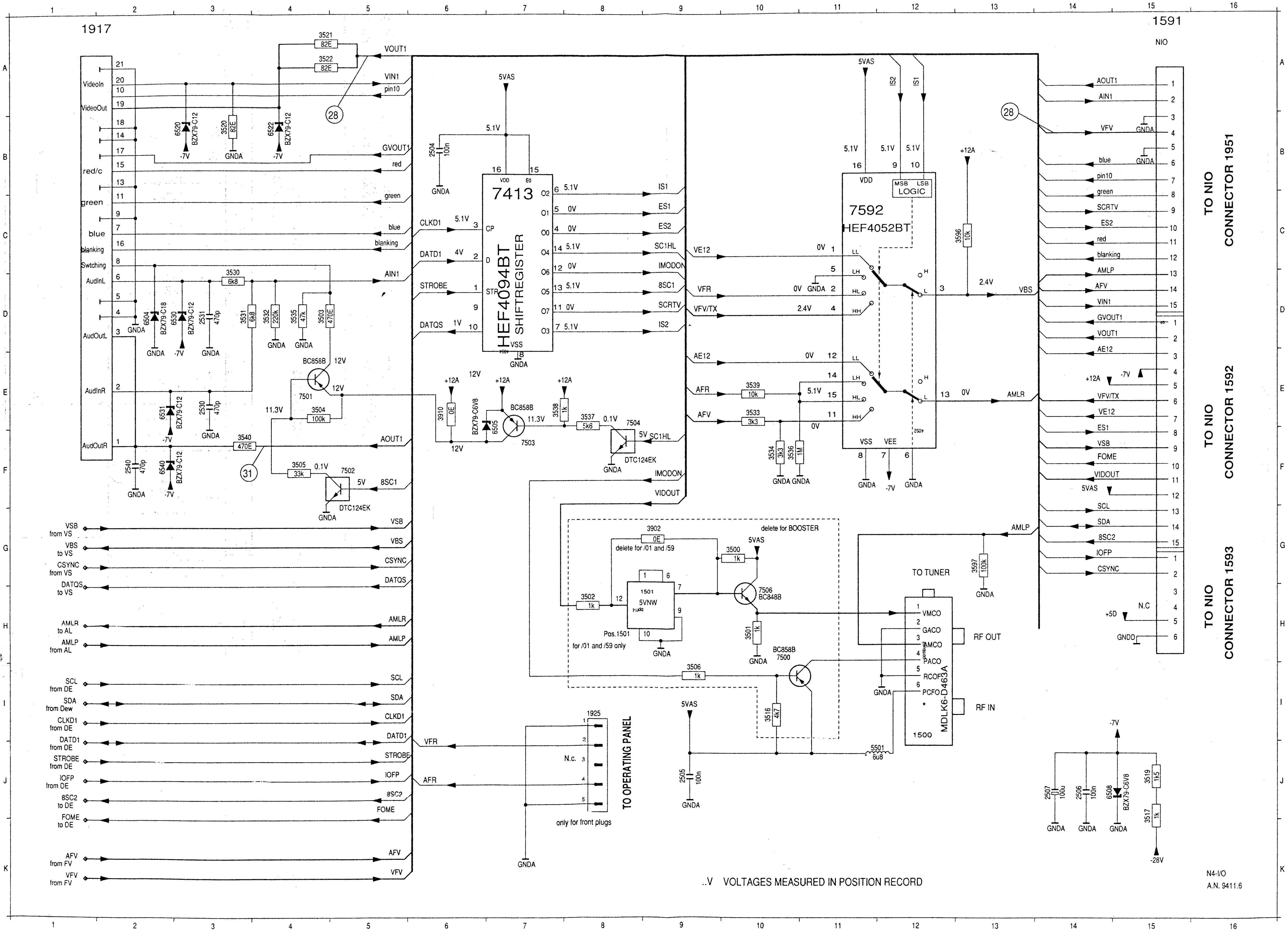
.. OSCILLOGRAMS

N4-FV

A.N. 9411.1

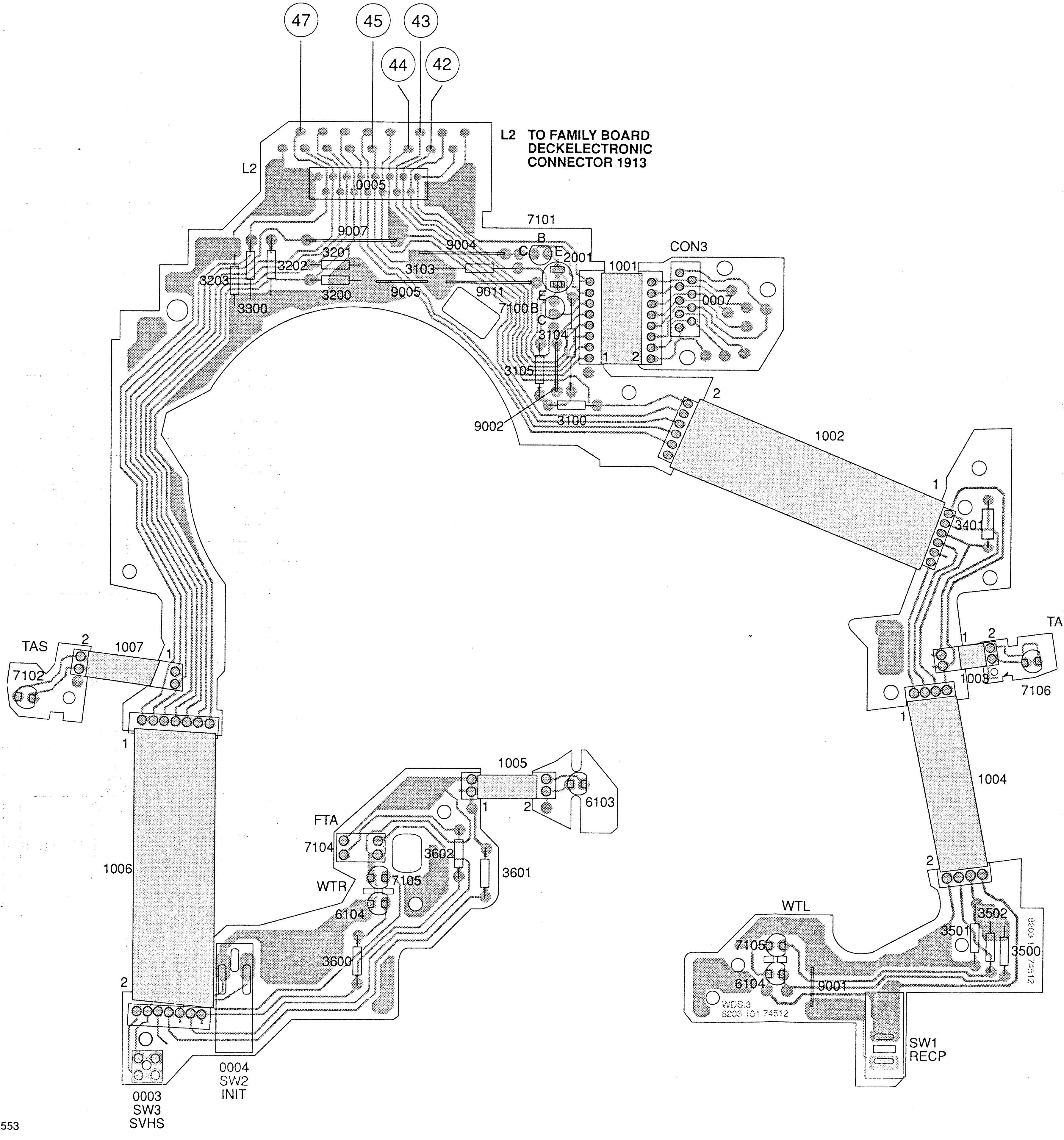
1720	G 8
1721	H 8
1740	J13
1741	K13
1745	J15
1746	K15
1821	B15
2700	K 3
2701	K 2
2702	F 2
2703	F 4
2704	K 4
2720	H 6
2721	I 6
2722	I 7
2725	F14
2726	H16
2727	H15
2728	G15
2736	F11
2737	G11
2738	F10
2739	F10
2740	J11
2741	J12
2820	E13
2821	E14
2822	E12
2823	D14
2824	F12
2834	B13
2840	A18
2841	A18
2842	A21
2843	G22
2844	E19
2845	A17
2846	E18
3701	F 5
3702	J 2
3703	J 2
3704	J 3
3705	K 3
3707	K 4
3708	K 4
3720	H 7
3721	I 7
3723	F16
3725	E 5
3726	F 5
3727	H18
3728	H16
3729	H17
3730	F15
3731	F15
3737	G16
3739	F17
3741	J 9
3742	J10
3743	J14
3744	J12
3745	J14
3746	K14
3749	F11
3760	I16
3762	J18
3782	J11
3820	D13
3821	D12
3822	E13
3823	E14
3824	C13
3825	D15
3826	C12
3827	D13
3829	C13
3831	D15
3832	C14
3833	A14
3834	A15
3835	D15
3901	K11
3940	G22
5700	K 3
5720	I 6
5723	H 7
5724	I 7
5725	F13
5727	F10
5728	F23
5740	K13
6720	I 7
6721	H 7
6820	D13
6821	E13
6822	E12
6823	B14
6824	B14
7720	H13
7721	G17
7723	G18
7727	C12
7761	I19
7823	C14
7824	C15
7840	C17

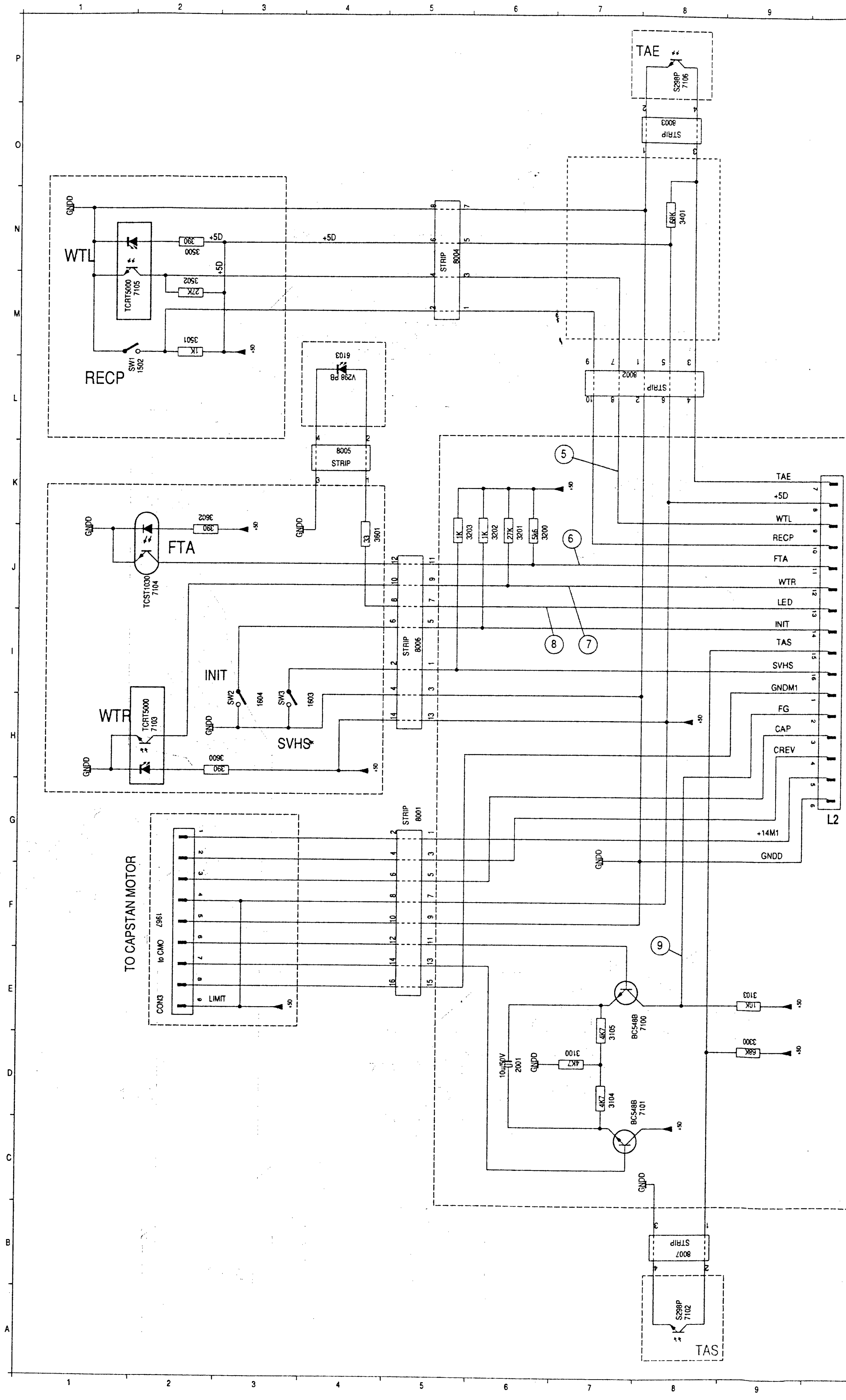
FAMILY BOARD IN/OUT - I/O N4


1917
1591
NIO
VideoIn
VideoOut
red/c
green
blue
blanking
Swtching
AudInL
AudOutL
AudInR
AudOutR
VOUT1
VIN1
pin10
GVOUT1
red
green
blue
blanking
AIN1
AOUT1
8SC1
3521 82E
3522 82E
3520 82E
6520 BZX79-C12
6522 BZX79-C12
3530 6k8
3531 6k8
3532 220k
3535 47k
3503 470E
6504 BZX79-C18
6530 BZX79-C12
2531 470p
6531 BZX79-C12
2530 470p
6540 BZX79-C12
2540 470p
3540 470E
3504 100k
3505 33k
7501 BC858B
7502 DTC124EK
GNDA
-7V
12V
11.3V
0.1V
5V
28
31
5VAS
5.1V
2504 100n
7413
HEF4094BT
SHIFTREGISTER
VDD
EO
VSS
CP
D
STR
CLKD1
DATD1
STROBE
DATQS
IS1
ES1
ES2
SC1HL
IMODON
8SC1
SCRTV
IS2
O2 O1 O0 O4 O6 O5 O7 O3
+12A
3910 0E
6505 BZX79-C6V8
7503 BC858B
3538 1k
3537 5k6
7504 DTC124EK
SC1HL
IMODON
VIDOUT
7592
HEF4052BT
MSB LSB
LOGIC
VE12
VFR
VFV/TX
AE12
AFR
AFV
3539 10k
3533 3k3
3534 3k3
3536 1M
3596 10k
2.4V
VBS
AMLR
VSS VEE
AMLP
3597 100k
TO TUNER
VMCO
GACO
AMCO
PACO
RCOF
PCFO
MDLK6-D463A
1500
RF OUT
RF IN
3902 0E
delete for /01 and /59
delete for BOOSTER
3500 1k
7506 BC848B
3502 1k
1501 5VNW
Pos.1501 for /01 and /59 only
3501 1k
7500 BC858B
3506 1k
3516 4k7
5501 6u8
2505 100n
1925
N.c.
TO OPERATING PANEL
only for front plugs
VFR
AFR
VSB from VS
VBS to VS
CSYNC from VS
DATQS to VS
AMLR to AL
AMLP from AL
SCL from DE
SDA from Dew
CLKD1 from DE
DATD1 from DE
STROBE from DE
IOFP from DE
8SC2 to DE
FOME to DE
AFV from FV
VFV from FV
AOUT1
AIN1
VFV
pin10
SCRTV
ES2
AMLP
AFV
VIN1
GVOUT1
VOUT1
AE12
+12A
VFV/TX
VE12
ES1
VSB
FOME
VIDOUT
SCL
SDA
8SC2
IOFP
CSYNC
N.C
+5D
GNDD
TO NIO CONNECTOR 1951
TO NIO CONNECTOR 1592
TO NIO CONNECTOR 1593
2507 100u
2506 100n
6508 BZX79-C6V8
3519 1k5
3517 1k
-28V
..V VOLTAGES MEASURED IN POSITION RECORD
N4-I/O
A.N. 9411.6

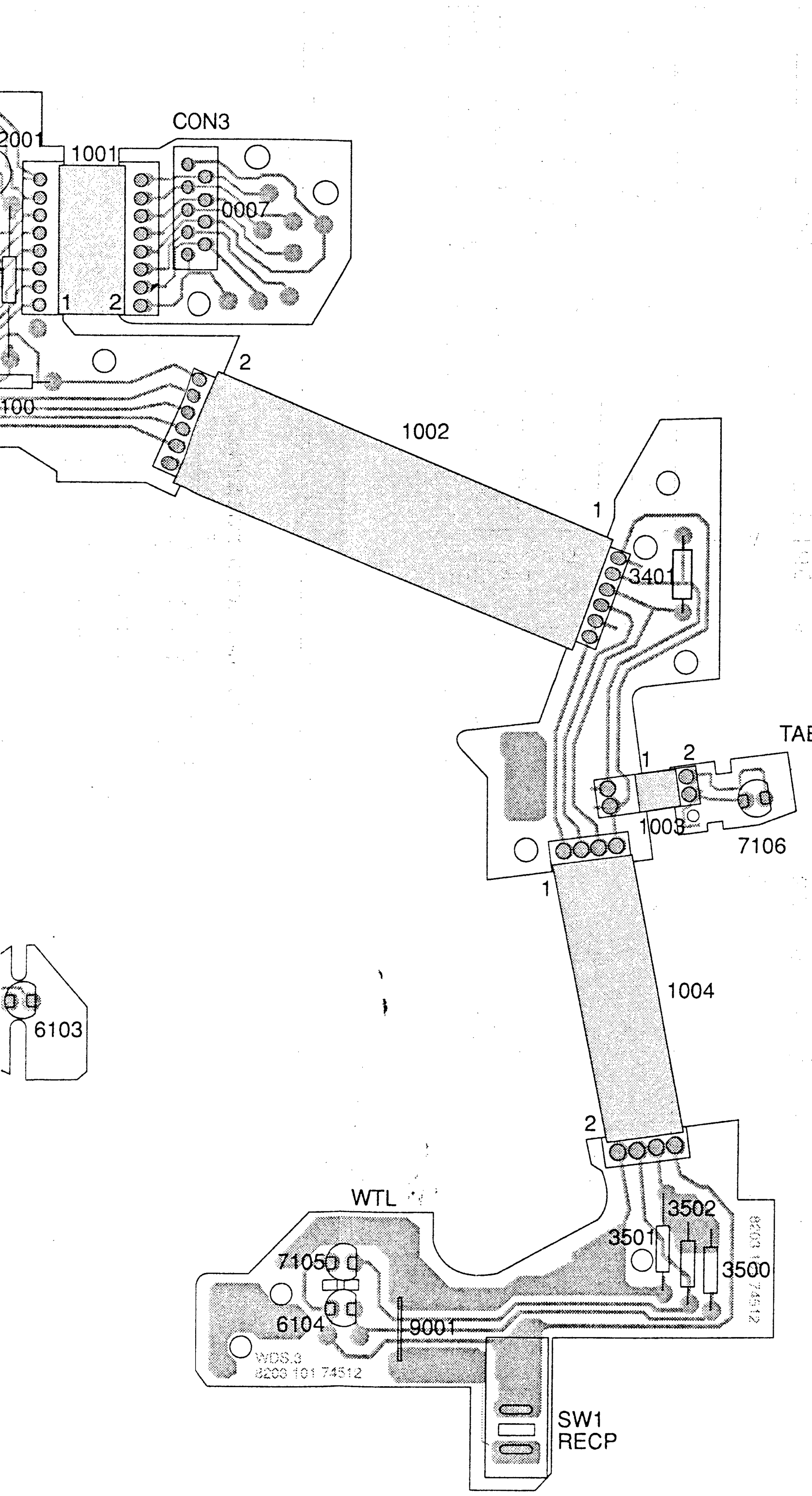
1500	I12
1501	H 8
1591	A15
1917	A 1
1925	I 8
2504	B 6
2505	J 9
2506	I14
2507	I13
2530	E 3
2531	D 3
2540	F 2
3500	G10
3501	H10
3502	H 8
3503	D 4
3504	E 4
3505	F 4
3506	I 9
3516	I10
3517	J15
3519	I15
3520	B 3
3521	A 4
3522	A 4
3530	D 3
3531	D 3
3532	D 4
3533	E10
3534	F10
3535	D 4
3536	F10
3537	E 8
3538	E 7
3539	E10
3540	F 3
3596	C13
3597	G13
3902	G 9
3910	E 6
5501	J12
6504	D 2
6505	E 7
6508	I14
6520	B 3
6522	B 4
6530	D 3
6531	E 2
6540	F 2
7413	C 7
7500	H10
7501	E 4
7502	F 5
7503	F 7
7504	E 8
7506	H10
7592	C11

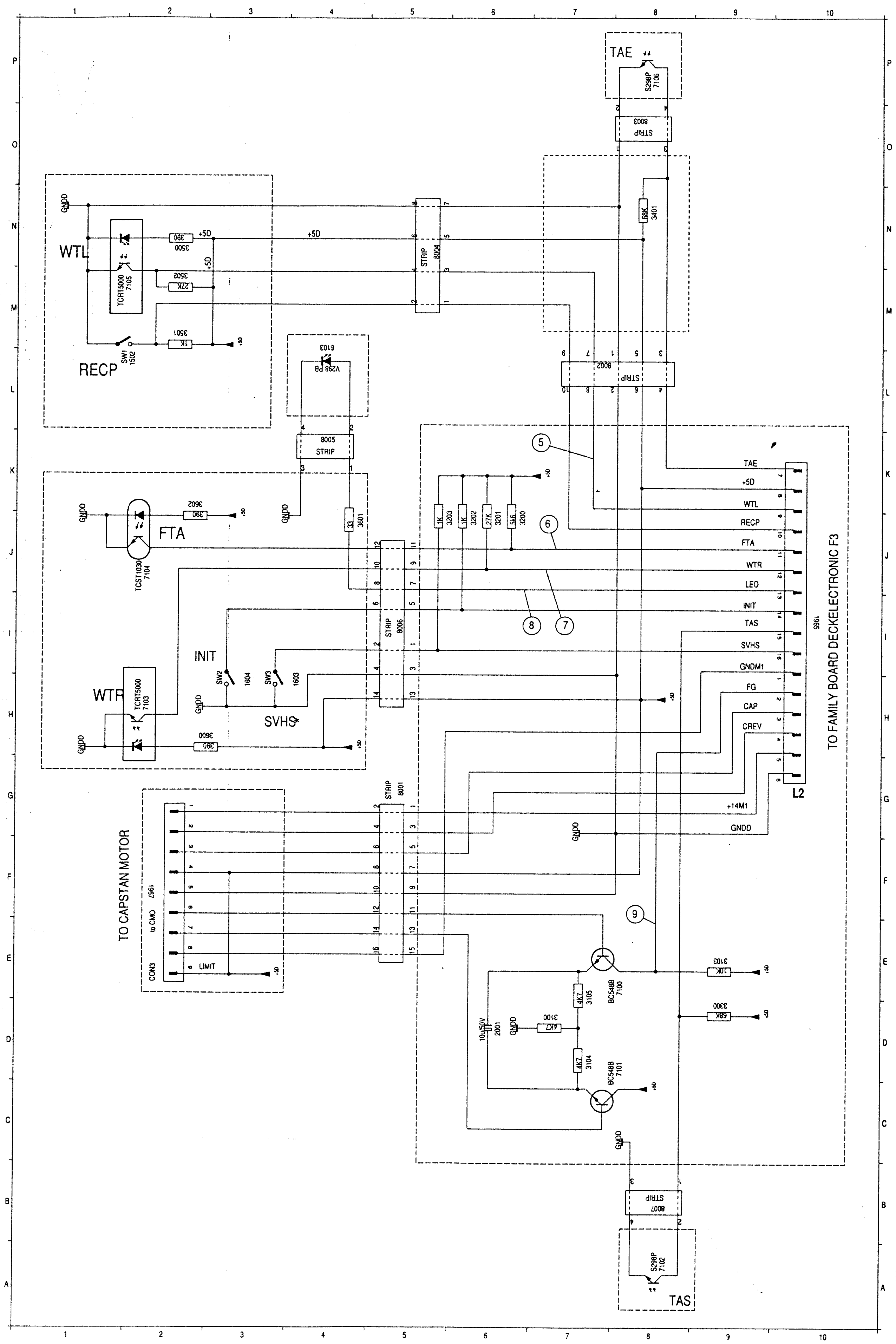
TAPE DECK SENSOR BOARD


47
45
43
44
42
L2 TO FAMILY BOARD DECKELECTRONIC CONNECTOR 1913
L2
0005
7101
9007
9004
B
C
E
2001
3201
3202
3203
3103
1001
CON3
3300
3200
9005
9011
7100
0007
3104
3105
1
2
9002
3100
1002
3401
TAS
7102
1007
TAE
1003
7106
1004
1005
6103
FTA
7104
3602
3601
1006
WTR
7105
6104
3600
WTL
7105
6104
9001
3501
3502
3500
WDS.3
8203 101 74512
SW1
RECP
0004
SW2
INIT
0003
SW3
SVHS


TAE
7106
STRIP 8003
68K 3401
WTL
TCRT5000 7105
390 3500
27K 3502
1K 3501
+5D
RECP
SW1 1502
STRIP 8004
STRIP 8002
6103
STRIP 8005
FTA
TCST1030 7104
390 3602
33 3601
1K 3203
1K 3202
27K 3201
56K 3200
INIT
SW2 1604
SW3 1603
SVHS
WTR
TCRT5000 7103
390 3600
STRIP 8006
STRIP 8001
TO CAPSTAN MOTOR
CON3
LIMIT
TAE
+5D
WTL
RECP
FTA
WTR
LED
INIT
TAS
SVHS
GNDM1
FG
CAP
CREV
+14M1
GNDD
L2
5
6
7
8
9
BC548B 7100
BC548B 7101
1K 3103
68K 3300
4K7 3105
4K7 3100
4K7 3104
10µ 2001
STRIP 8007
TAS
7102
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
1
2
3
4
5
6
7
8
9

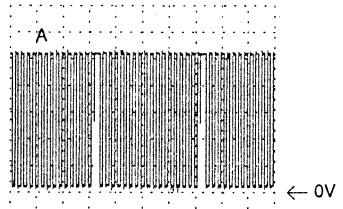
MILY BOARD
ELECTRONIC
ECTOR 1913


2001
1001
CON3
0007
1
2
100
1002
2
1
3401
2
1
TAE
1003
7106
1
1004
6103
2
WTL
3502
3501
3500
7105
6104
9001
WDS.3
8203 101 74512
SW1
RECP


TAE
S298P 7106
STRIP 8003
3401 68K
GNDD
WTL
TCRT5000 7105
3500 390
3502 27K
+5D
RECP
SW1 1502
3501 1K
STRIP 8004
STRIP 8002
6103 V298 PB
8005 STRIP
5
6
7
8
9
FTA
TCST1030 7104
3602 390
3601 33
3203 1K
3202 1K
3201 27K
3200 5K6
STRIP 8006
INIT
SW2 1604
SW3 1603
SVHS
WTR
TCRT5000 7103
3600 390
TAE
+5D
WTL
RECP
FTA
WTR
LED
INIT
TAS
SVHS
GNDM1
FG
CAP
CREV
+14M1
GNDD
1965
L2
TO FAMILY BOARD DECKELECTRONIC F3
TO CAPSTAN MOTOR
CON3
to CMO
1967
LIMIT
STRIP 8001
BC548B 7100
3105 4K7
3103 10K
3300 68K
10u 63V 2001
3100 4K7
3104 4K7
BC548B 7101
STRIP 8007
S298P 7102
TAS

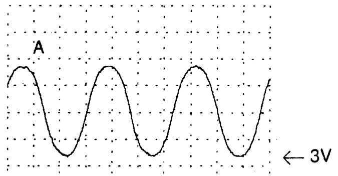
SW1	L 1
MP101	K 9
8007	B 8
8006	I 5
8005	K 4
8004	N 5
8003	O 8
8002	L 7
8001	G 5
7106	P 8
7105	M 1
7104	J 2
7103	H 2
7102	A 8
7101	D 8
7100	E 8
6103	L 4
3602	K 2
3601	J 4
3600	H 2
3502	M 2
3501	M 2
3500	N 2
3401	N 8
3300	D 9
3203	J 5
3202	J 6
3201	J 6
3200	J 6
3105	E 7
3104	D 7
3103	E 9
3100	D 7
2001	D 6
1969	A 7
1968	A 6
1967	F 2
1965	I10
1604	H 3
1603	H 4

A: DC, 1 V/Div, 10 ms/Div



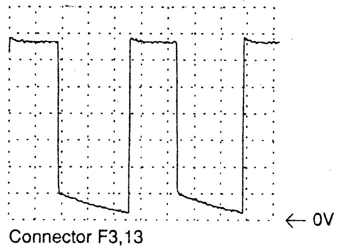
Connector F4,1
PG/FG

A: AC, 0.5 V/Div, 0.2 ms/Div



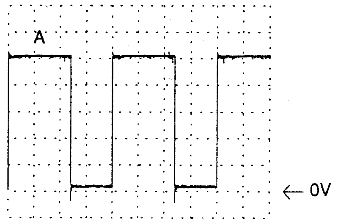
Connector F3,2
FG

A: DC, 0.5 V/Div, 0.5 ms/Div



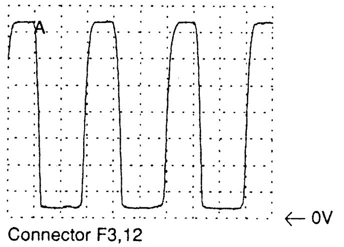
Connector F3,13
LED

A: DC, 1 V/Div, 10 ms/Div



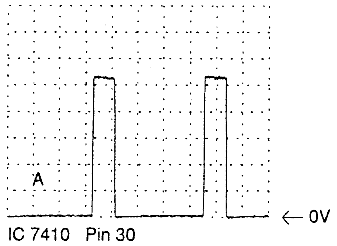
IC 7411 Pin 2
CTL1 REC

A: DC, 0.5 V/Div, 2 ms/Div



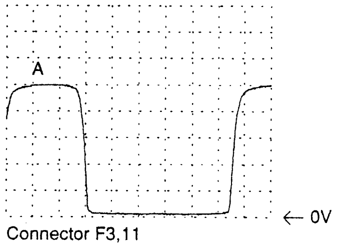
Connector F3,12
WTR Wind

A: DC, 1 V/Div, 10 us/Div



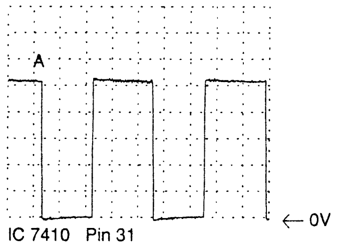
IC 7410 Pin 30
CAP

A: DC, 1 V/Div, 2 ms/Div



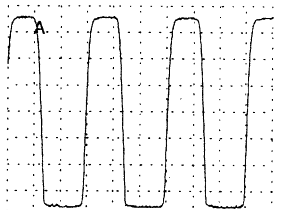
Connector F3,11
FTA Threading

A: DC, 1 V/Div, 10 us/Div



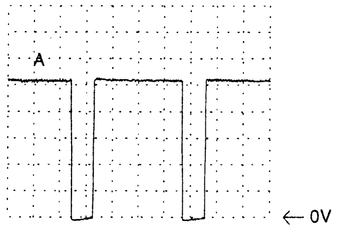
IC 7410 Pin 31
REEL

A: DC, 0.5 V/Div, 2 ms/Div



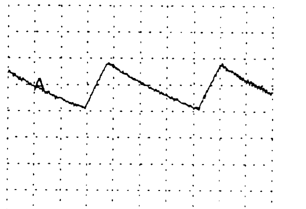
Connector F3,9
WTL Wind

A: DC, 1 V/Div, 10 us/Div



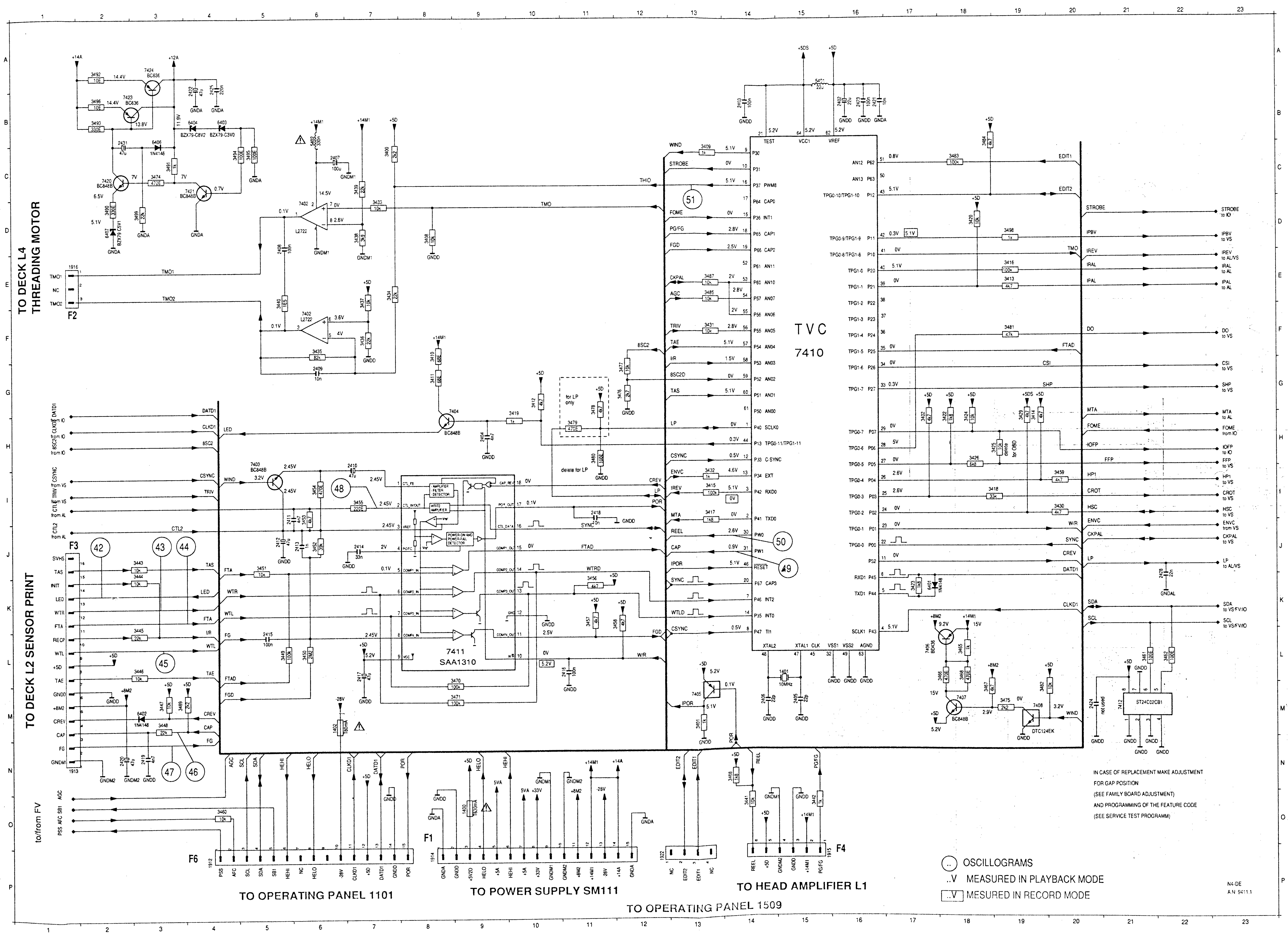
IC 7410 Pin 32
THIO

A: DC, 0.2 V/Div, 10 us/Div



Connector F3,3
CAP

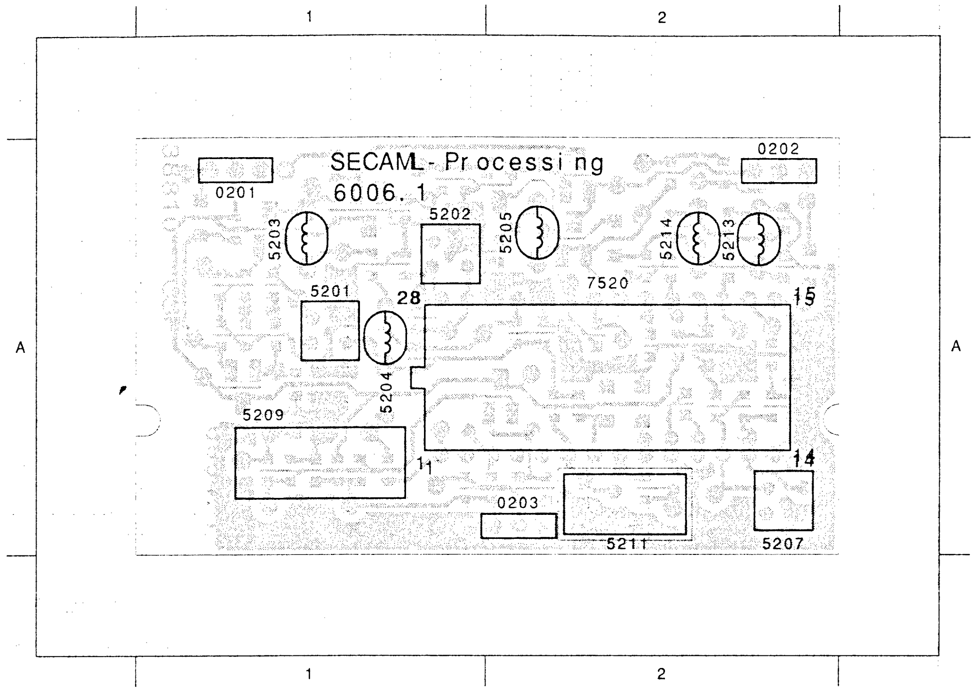
FAMILY BOARD DECKELECTRONIC - DE N4


TO DECK L4 THREADING MOTOR
TO DECK L2 SENSOR PRINT
to/from FV
TVC
7410
7411
SAA1310
TO OPERATING PANEL 1101
TO POWER SUPPLY SM111
TO HEAD AMPLIFIER L1
TO OPERATING PANEL 1509
IN CASE OF REPLACEMENT MAKE ADJUSTMENT
FOR GAP POSITION
(SEE FAMILY BOARD ADJUSTMENT)
AND PROGRAMMING OF THE FEATURE CODE
(SEE SERVICE TEST PROGRAMM)
(..) OSCILLOGRAMS
..V MEASURED IN PLAYBACK MODE
..V MESURED IN RECORD MODE
N4-DE
A N 9411.1

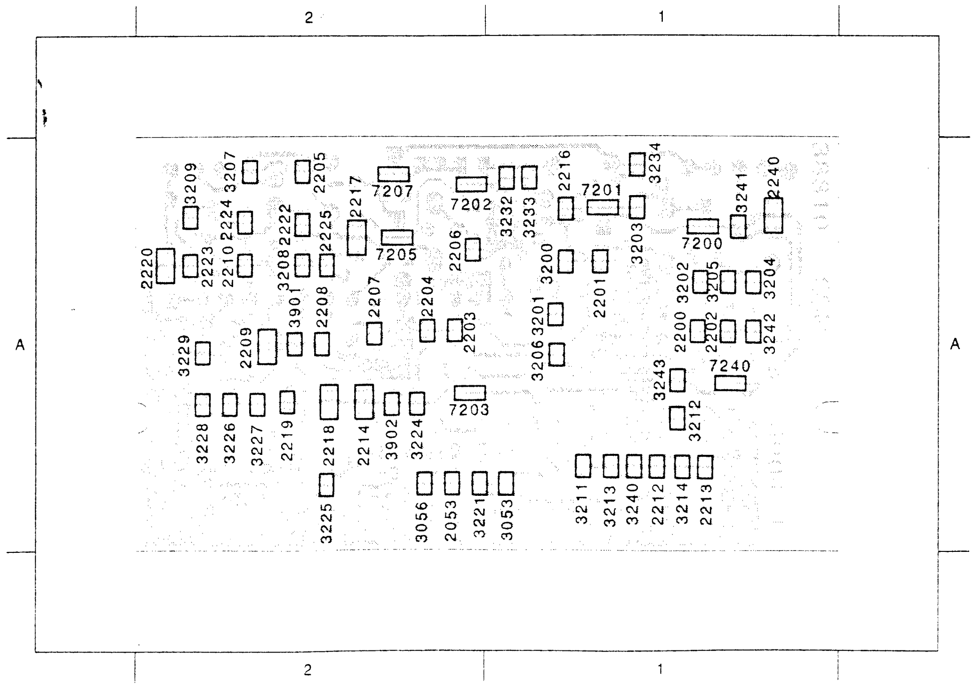
1400	O 9
1401	L15
1402	M 6
1912	P 4
1913	N 1
1914	P 8
1915	P15
1916	E 2
1922	P12
2402	B16
2403	B14
2404	H 9
2405	M15
2406	M14
2407	C 6
2408	D 5
2409	G 6
2410	H 7
2411	I 5
2412	J 5
2413	J 6
2414	J 7
2415	L 5
2416	L11
2417	L 7
2418	I11
2419	N 3
2420	N 2
2421	B16
2422	A 4
2423	B16
2424	M20
2425	A 4
2428	K22
2430	G18
2431	B 2
3400	C 7
3401	M13
3402	H17
3408	D 8
3409	C13
3410	F 8
3411	G 8
3412	G10
3413	E19
3414	H19
3415	I13
3416	E19
3417	I13
3418	I19
3419	G10
3420	D18
3422	H18
3423	K17
3424	H18
3425	H19
3426	H18
3429	H19
3430	I20
3431	F13
3432	I13
3433	D 7
3434	E 7
3435	F 6
3436	F 7
3437	E 7
3438	D 7
3439	C 7
3440	E 5
3441	O14
3442	O15
3443	J 3
3444	J 3
3445	K 3
3446	L 3
3447	M 3
3448	M 3
3449	L 5
3450	L 6
3451	J 5
3452	J 6
3453	I 6
3454	I 6
3455	I 7
3456	K11
3457	K11
3458	K12
3459	I20
3460	O 4
3461	L21
3462	L22
3465	L18
3466	L18
3467	M18
3468	L18
3470	L 9
3471	M 9
3474	C 3
3475	M19
3476	G12
3477	G12
3478	G11
3479	H11
3480	H11
3481	F19
3482	M19
3483	C18
3484	B18
3485	E13
3486	G18
3487	E13
3488	N14
3489	M 3
3490	D 2
3491	C 3
3492	A 2
3493	B 2
3494	C 4
3495	C 5
3496	B 2
3497	F17
3498	D19
3499	D 3
5401	A15
5402	B 6
6401	K17
6402	M 3
6403	B 4
6404	B 4
6406	B 3
6407	D 2
7402	D 6
7402	F 6
7403	H 5
7404	G 9
7405	M13
7406	L17
7407	M18
7408	M19
7410	F15
7411	L 8
7412	M21
7420	C 2
7421	C 4
7423	B 2
7424	A 3

CHROMA SIGNAL SECAM PROCESSING BOARD CSP N4

0201	A 1	0203	A 2	5202	A 1	5204	A 1	5207	A 2	5211	A 2	5214	A 2
0202	A 2	5201	A 1	5203	A 1	5205	A 2	5209	A 1	5213	A 2	7520	A 2

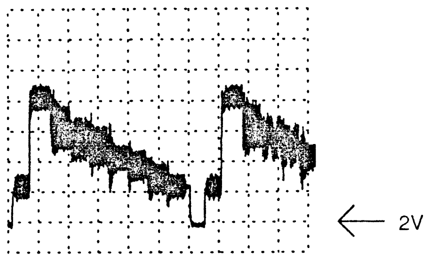

1
2
A
A
SECAM - Processing
6006. 1
0201
0202
5202
5203
5205
5214
5213
5201
28
7520
15
5204
5209
11
14
0203
5211
5207
1
2

2053	A 2	2209	A 2	2222	A 2	3203	A 1	3214	A 1	3234	A 1	7203	A 2
2200	A 1	2210	A 2	2223	A 2	3204	A 1	3221	A 2	3240	A 1	7205	A 2
2201	A 1	2212	A 1	2224	A 2	3205	A 1	3224	A 2	3241	A 1	7207	A 2
2202	A 1	2213	A 1	2225	A 2	3206	A 1	3225	A 2	3242	A 1	7240	A 1
2203	A 2	2214	A 2	2240	A 1	3207	A 2	3226	A 2	3243	A 1		
2204	A 2	2216	A 1	3053	A 1	3208	A 2	3227	A 2	3901	A 2		
2205	A 2	2217	A 2	3056	A 2	3209	A 2	3228	A 2	3902	A 2		
2206	A 2	2218	A 2	3200	A 1	3211	A 1	3229	A 2	7200	A 1		
2207	A 2	2219	A 2	3201	A 1	3212	A 1	3232	A 1	7201	A 1		
2208	A 2	2220	A 2	3202	A 1	3213	A 1	3233	A 1	7202	A 2		


2
1
A
A
2220
3209
2223
2224
2210
3207
3208
2222
3901
2205
2225
2208
2217
7207
7205
2207
2204
7202
2206
2203
3232
3233
2216
3200
3201
3206
7201
2201
3234
3203
7200
3241
2240
3202
3205
3204
2200
2202
3242
3243
7240
3212
3229
2209
3228
3226
3227
2219
2218
2214
3902
3224
7203
3225
3056
2053
3221
3053
3211
3213
3240
2212
3214
2213
2
1

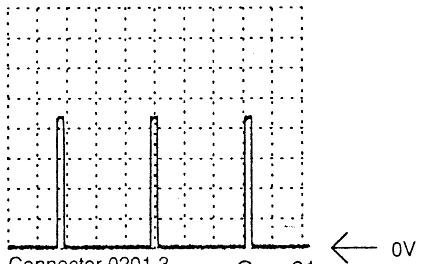
OSCILLOGRAMS CHROMA SECAM PRINT CSP

A: DC, 200mV/Div, 10us/Div



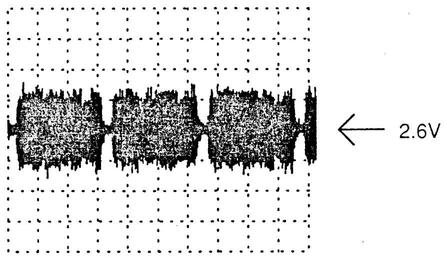
Connector 0201,1 VBS Osc. 60

A: DC, 1 V/Div, 20us/Div



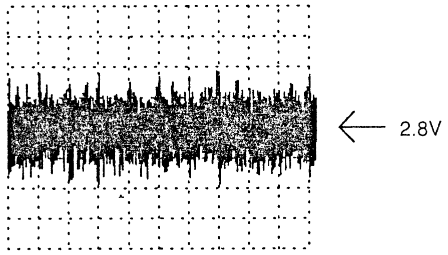
Connector 0201,3 CSYNC Osc. 61

A: AC, 50mV/Div, 20us/Div



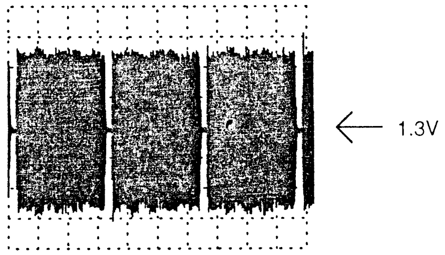
IC 7520,25 Osc. 62

A: AC, 100mV/Div, 20ms/Div



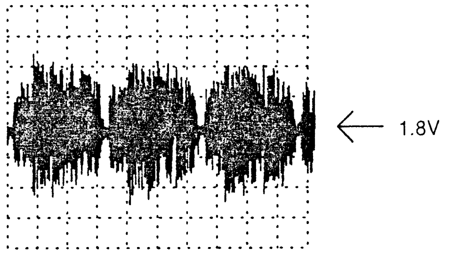
Connector 0202,2 FMPV Osc. 63

A: AC, 100mV/Div, 20us/Div



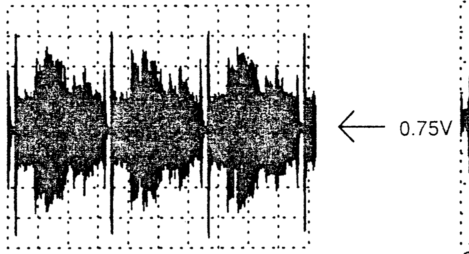
IC 7520,16 Osc. 64

A: AC, 200mV/Div, 20us/Div



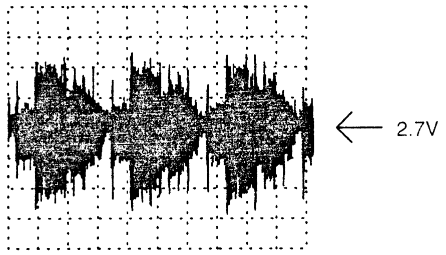
IC 7520,1 Osc. 65

A: AC, 100mV/Div, 20us/Div



Connector 0202,3 CHRS Osc. 66

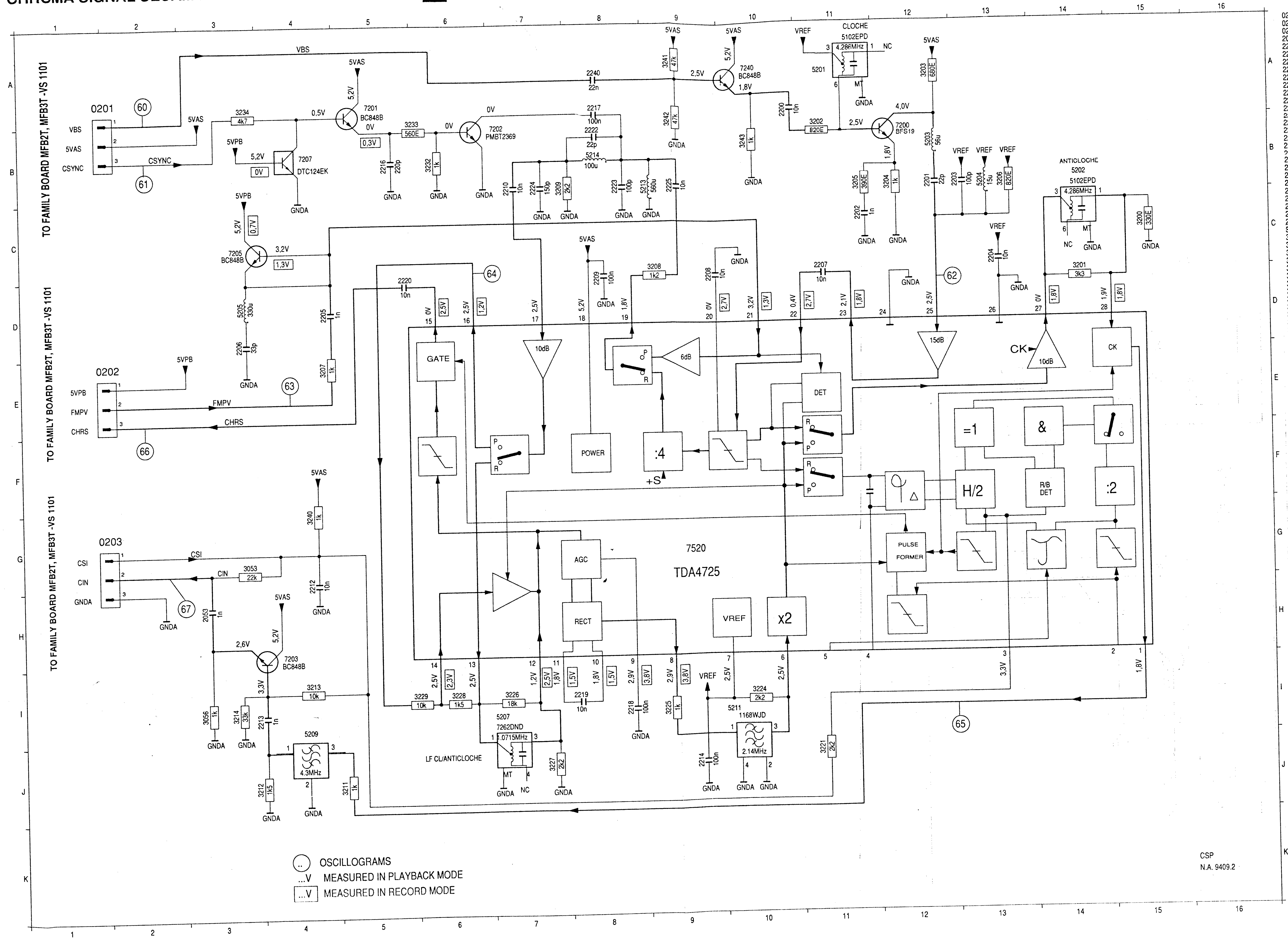
A: AC, 50mV/Div, 20us/Div



Connector 0203,2 CIN Osc. 67

REMARKS :

CHROMA SIGNAL SECAM PROCESSING BOARD CSP N4

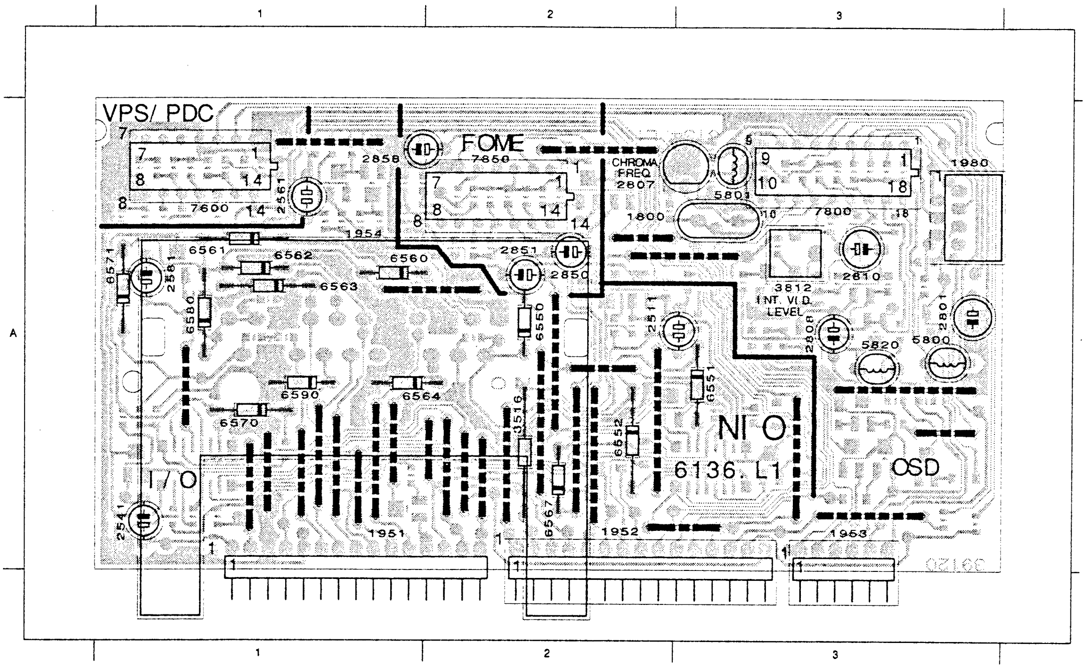

TO FAMILY BOARD MFB2T, MFB3T -VS 1101
0201
VBS
5VAS
CSYNC
0202
5VPB
FMPV
CHRS
0203
CSI
CIN
GNDA
60
61
63
64
65
66
67
62
7201 BC848B
7202 PMBT2369
7207 DTC124EK
7205 BC848B
7203 BC848B
7240 BC848B
7200 BFS19
CLOCHE 5102EPD 4.286MHz
ANTICLOCHE 5202 5102EPD 4.286MHz
5207 7262DND 1.0715MHz
LF CL/ANTICLOCHE
5209 4.3MHz
5211 1168WJD 2.14MHz
7520
TDA4725
GATE
10dB
6dB
15dB
CK
POWER
:4
+S
DET
=1
&
H/2
R/B DET
:2
PULSE FORMER
AGC
RECT
VREF
x2
GNDA
VREF
5VAS
5VPB
CSP
N.A. 9409.2
OSCILLOGRAMS
...V MEASURED IN PLAYBACK MODE
...V MEASURED IN RECORD MODE

0201	A 2
0202	E 2
0203	G 2
2053	H 3
2200	A10
2201	B12
2202	C11
2203	B13
2204	C13
2205	D 4
2206	D 3
2207	C11
2208	D 9
2209	D 6
2210	B 7
2212	G 4
2213	I 3
2214	J 9
2216	B 5
2217	A 8
2218	I 8
2219	I 8
2220	D 5
2222	B 8
2223	B 8
2224	B 7
2225	B 9
2240	A 8
3053	G 3
3056	I 3
3200	C15
3201	D14
3202	B11
3203	A12
3204	B12
3205	B11
3206	B13
3207	E 4
3208	C 9
3209	B 7
3211	J 5
3212	J 3
3213	I 4
3214	I 3
3221	J11
3224	I10
3225	I 9
3226	I 7
3227	J 7
3228	I 6
3229	I 6
3232	B 6
3233	B 6
3234	A 3
3240	G 4
3241	A 9
3242	A 9
3243	B10
5201	A11
5202	B14
5203	B12
5204	B13
5205	D 3
5207	I 7
5209	I 4
5211	I10
5213	B 9
5214	B 8
7200	B12
7201	A 5
7202	B 7
7203	H 4
7205	C 3
7207	B 4
7240	A10
7520	G 9

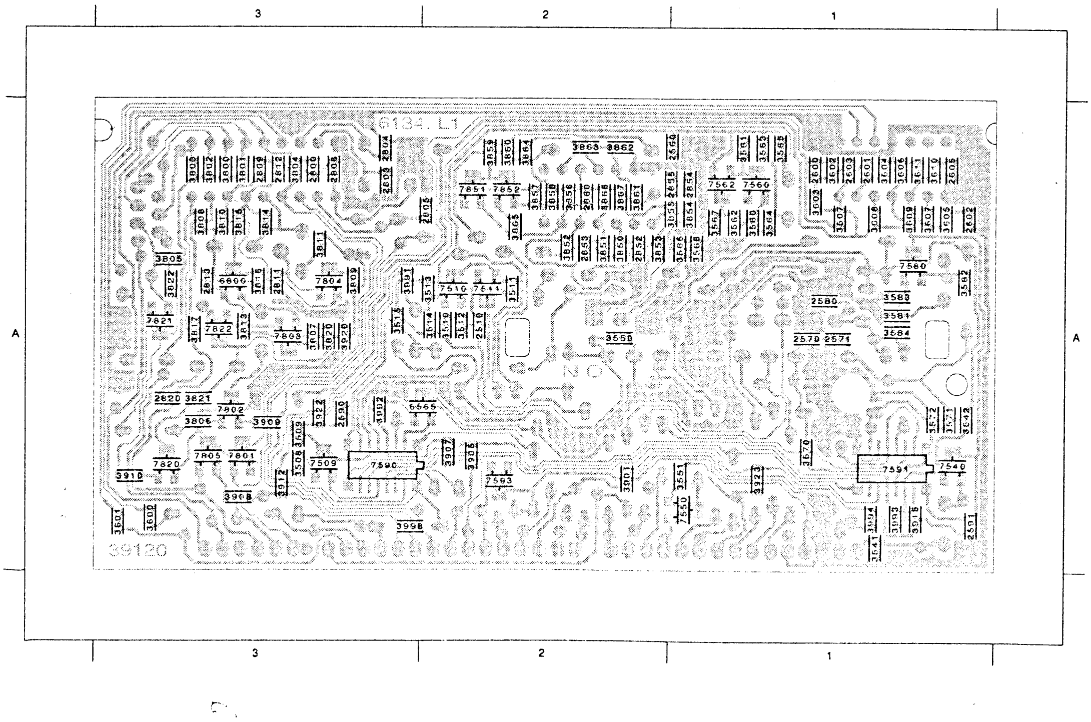
NIO BOARD **N4**

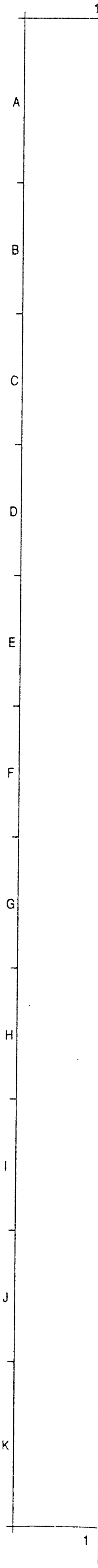
NIO-OS

1800 A 3	2511 A 3	2808 A 3	3812 A 3	6552 A 2	6567 A 2	7800 A 3	9004 A 3	9010 A 1	9016 A 2	9023 A 1	9030 A 3
1951 A 1	2541 A 1	2810 A 3	5800 A 3	6560 A 1	6570 A 1	7850 A 2	9005 A 2	9011 A 2	9017 A 2	9024 A 2	9031 A 3
1952 A 2	2561 A 1	2850 A 2	5801 A 3	6561 A 1	6571 A 1	9000 A 3	9006 A 2	9012 A 2	9018 A 2	9025 A 1	
1953 A 3	2581 A 1	2851 A 2	5820 A 3	6562 A 1	6580 A 1	9001 A 3	9007 A 2	9013 A 2	9020 A 1	9027 A 2	
1954 A 1	2801 A 3	2858 A 1	6550 A 2	6563 A 1	6590 A 1	9002 A 2	9008 A 1	9014 A 1	9021 A 1	9028 A 2	
1980 A 3	2807 A 3	3516 A 2	6551 A 3	6564 A 1	7600 A 1	9003 A 2	9009 A 1	9015 A 1	9022 A 1	9029 A 3	

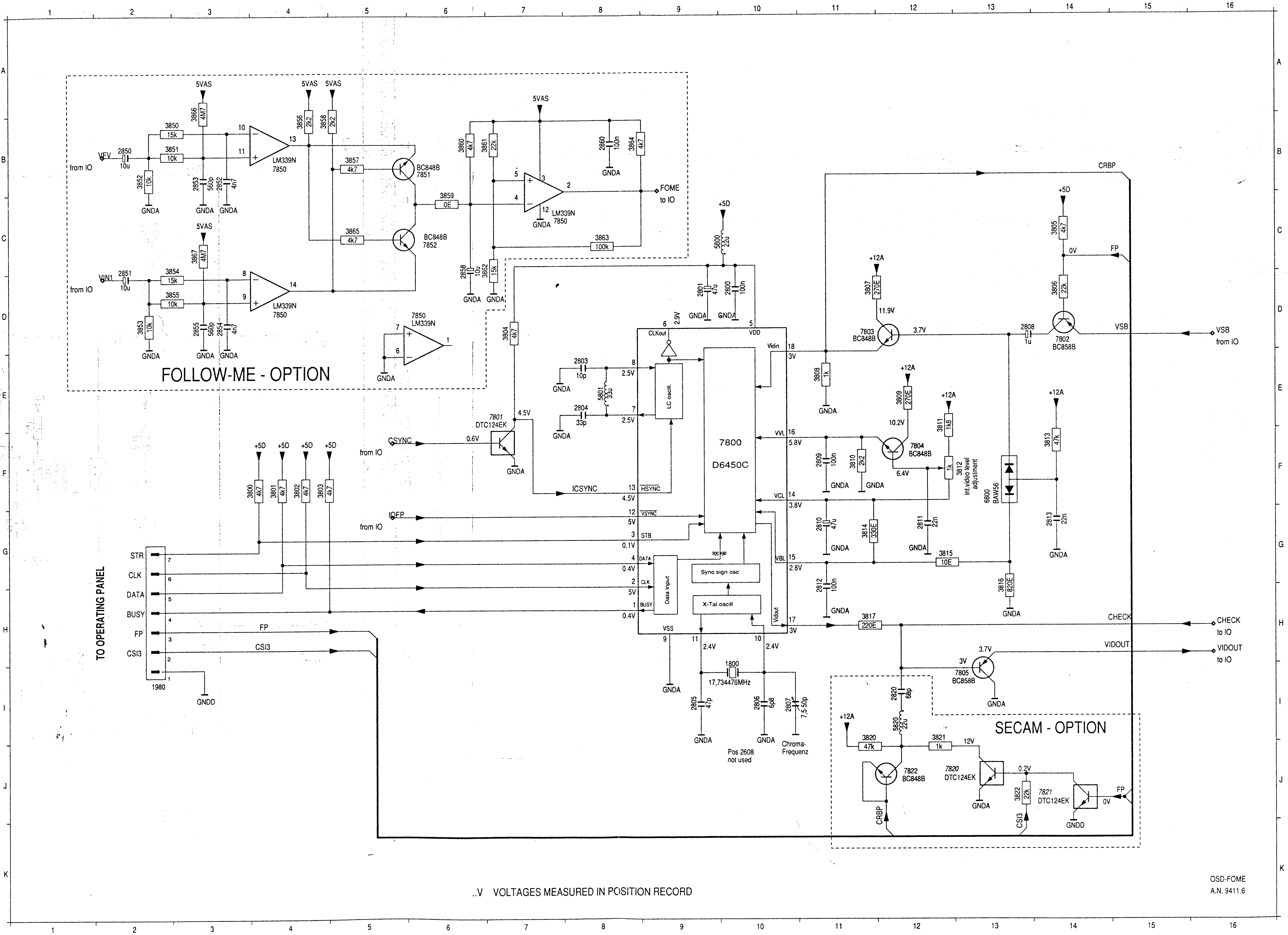

1
2
3
A
VPS/ PDC
7600
FOME
7850
CHROMA FREQ 2807
5801
7800
1980
1800
1954
2858
2561
6561
6562
6563
6560
2851
2850
3812 INT. VID. LEVEL
2810
6571
2581
6580
6550
2511
2800
5820
5800
2801
6590
6564
6570
3516
6552
6551
NI O
6136. L1
OSD
I/O
2541
6567
1951
1952
1953
39120

2510 A 2	2803 A 3	2860 A 2	3551 A 1	3581 A 1	3609 A 1	3810 A 3	3853 A 2	3866 A 2	3991 A 3	7562 A 1	7851 A 2
2560 A 1	2804 A 3	3507 A 1	3560 A 1	3582 A 1	3610 A 1	3811 A 3	3854 A 1	3867 A 2	3992 A 3	7580 A 1	7852 A 2
2570 A 1	2805 A 2	3508 A 3	3561 A 1	3583 A 1	3611 A 1	3813 A 3	3855 A 1	3901 A 2	3993 A 1	7590 A 3	
2571 A 1	2806 A 3	3509 A 3	3562 A 1	3584 A 1	3800 A 3	3814 A 3	3856 A 2	3905 A 2	3994 A 1	7591 A 1	
2580 A 1	2809 A 3	3510 A 2	3563 A 1	3600 A 3	3801 A 3	3815 A 3	3857 A 2	3907 A 2	3998 A 3	7593 A 2	
2590 A 3	2811 A 3	3511 A 2	3564 A 1	3601 A 3	3802 A 3	3816 A 3	3858 A 2	3908 A 3	6565 A 2	7801 A 3	
2591 A 1	2812 A 3	3512 A 2	3565 A 1	3602 A 1	3803 A 3	3817 A 3	3859 A 2	3909 A 3	6800 A 3	7802 A 3	
2600 A 1	2813 A 3	3513 A 2	3566 A 1	3603 A 1	3804 A 3	3820 A 3	3860 A 2	3910 A 3	7509 A 3	7803 A 3	
2601 A 1	2820 A 3	3514 A 2	3567 A 1	3604 A 1	3805 A 3	3821 A 3	3861 A 2	3912 A 3	7510 A 2	7804 A 3	
2602 A 1	2852 A 2	3515 A 3	3568 A 1	3605 A 1	3806 A 3	3822 A 3	3862 A 2	3915 A 1	7511 A 2	7805 A 3	
2603 A 1	2853 A 2	3541 A 1	3570 A 1	3606 A 1	3807 A 3	3850 A 2	3863 A 2	3920 A 3	7540 A 1	7820 A 3	
2605 A 1	2854 A 1	3542 A 1	3571 A 1	3607 A 1	3808 A 3	3851 A 2	3864 A 2	3922 A 3	7550 A 1	7821 A 3	
2800 A 3	2855 A 1	3550 A 2	3572 A 1	3608 A 1	3809 A 3	3852 A 2	3865 A 2	3923 A 1	7560 A 1	7822 A 3	


3
2
1
A
6134. L1
3863
3862
7851
7852
7562
7560
3805
6800
7804
7510
7511
3550
2580
3582
3581
3584
2570
2571
7821
7822
7803
2820
3821
7802
3806
3909
6565
7820
7805
7801
3910
7509
7590
7593
3998
3908
7591
7540
39120


1
A
B
C
D
E
F
G
H
I
J
K
1

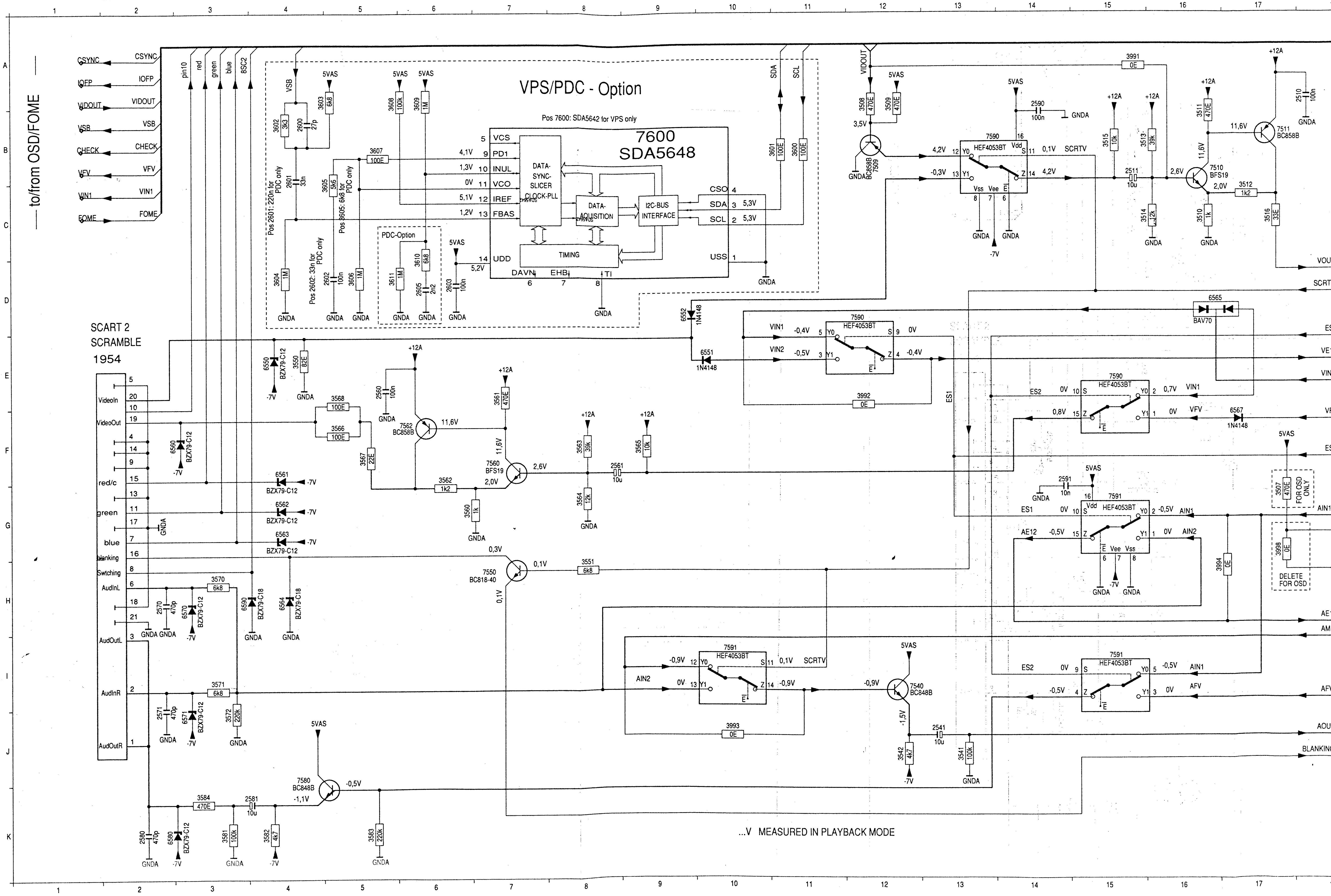
NIO-OSD/FOME-Part N4


FOLLOW-ME - OPTION
SECAM - OPTION
TO OPERATING PANEL
VFV from IO
VIN1 from IO
FOME to IO
CSYNC from IO
IOFP from IO
VSB from IO
CHECK to IO
VIDOUT to IO
CRBP
FP
CSI3
STR
CLK
DATA
BUSY
1980
GNDD
GNDA
5VAS
+5D
+12A
LM339N 7850
BC848B 7851
BC848B 7852
7801 DTC124EK
7800 D6450C
CLKout
VDD
Vidin
LC oscill.
HSYNC
VSYNC
STB
Data input
Sync sign osc
X-Tal oscill
VVL
VCL
VBL
Vidout
VSS
7803 BC848B
7804 BC848B
7802 BC858B
7805 BC858B
7822 BC848B
7820 DTC124EK
7821 DTC124EK
6800 BAW56
3812 1k int.video level adjustment
1800 17,734476MHz
Pos 2608 not used
Chroma-Frequenz
2807 7,5-50p
3850 15k
3851 10k
3852 10k
3853 10k
3854 15k
3855 10k
3856 2k2
3857 4k7
3858 2k2
3859 0E
3860 4k7
3861 22k
3862 15k
3863 100k
3864 4k7
3865 4k7
3866 4M7
3867 4M7
3800 4k7
3801 4k7
3802 4k7
3803 4k7
3804 4k7
3805 4k7
3806 22k
3807 270E
3808 1k
3809 270E
3810 2k2
3811 1k8
3813 47k
3814 330E
3815 10E
3816 820E
3817 220E
3820 47k
3821 1k
3822 22k
2800 100n
2801 47u
2803 10p
2804 33p
2805 47p
2806 6p8
2808 1u
2809 100n
2810 47u
2811 22n
2812 100n
2813 22n
2820 68p
2850 10u
2851 10u
2852 4n7
2853 560p
2854 4n7
2855 560p
2858 10u
2860 100n
5800 22u
5801 33u
5820 22u
OSD-FOME
A.N. 9411.6

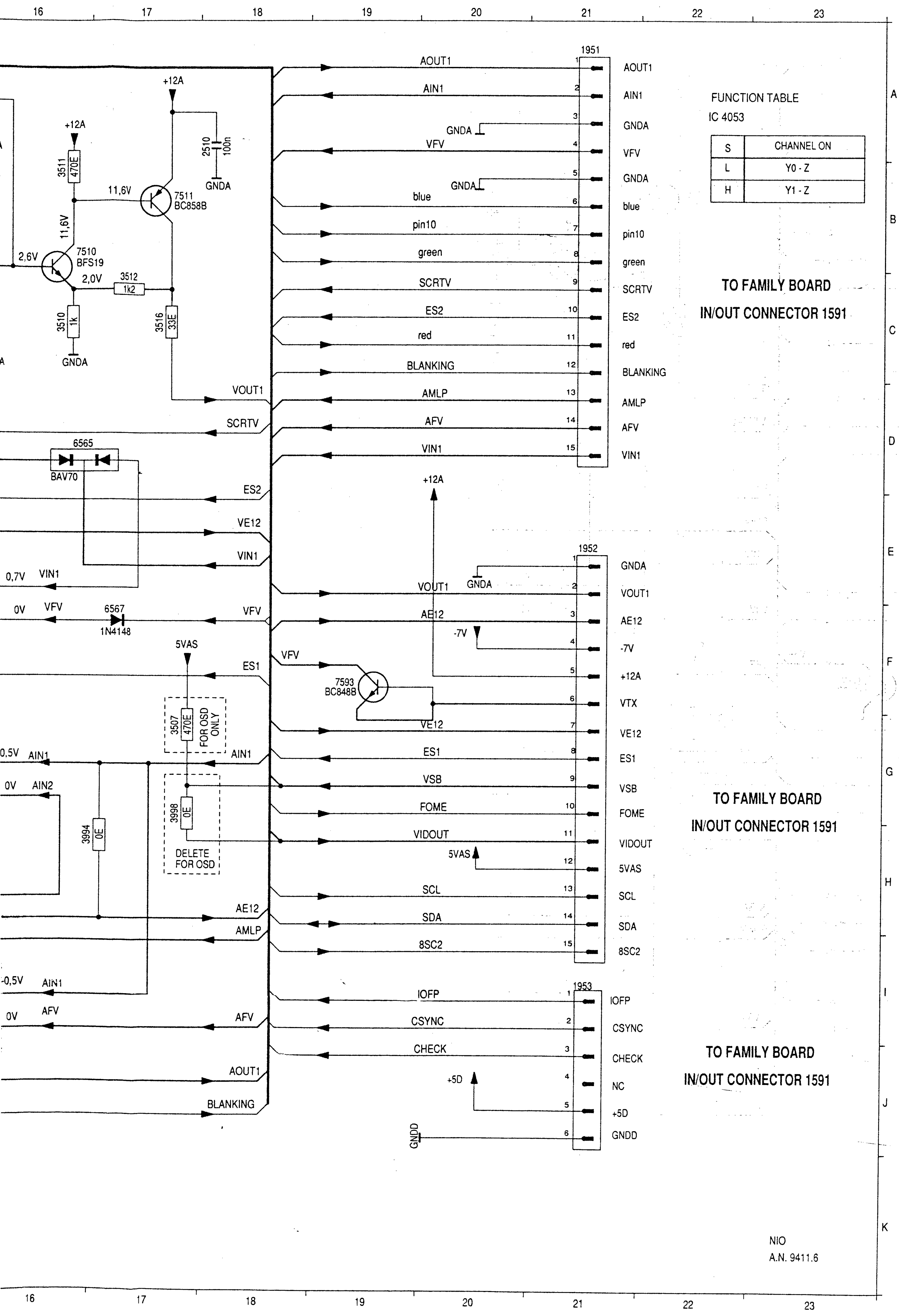
..V VOLTAGES MEASURED IN POSITION RECORD

1800	
1980	
2800	
2801	
2803	
2804	
2805	
2806	
2807	
2808	
2809	
2810	
2811	
2812	
2813	
2820	
2850	K 3
2851	
2852	K 4
2853	K 4
2854	
2855	
2858	
2860	J 9
3800	
3801	
3802	
3803	
3804	
3805	K15
3806	
3807	
3808	
3809	
3810	
3811	
3812	
3813	
3814	
3815	
3816	
3817	
3820	
3821	
3822	
3850	J 4
3851	K 4
3852	K 3
3853	
3854	
3855	
3856	J 5
3857	K 6
3858	J 6
3859	K 7
3860	J 7
3861	J 8
3862	
3863	K 9
3864	J10
3865	K 6
3866	J 4
3867	
5800	K11
5801	
5820	
6800	
7800	
7801	
7802	
7803	
7804	
7805	
7820	
7821	
7822	
7850	K 9
7850	
7850	
7850	K 5
7851	K 7
7852	K 7

NIO - IN/OUT-Part **N4**


to/from OSD/FOME
CSYNC
IOFP
VIDOUT
VSB
CHECK
VFV
VIN1
FOME
pin10
red
green
blue
8SC2
VPS/PDC - Option
Pos 7600: SDA5642 for VPS only
7600
SDA5648
VCS
PD1
INUL
VCO
IREF
FBAS
UDD
DATA-SYNC-SLICER CLOCK-PLL
DATA-AQUISITION
I2C-BUS INTERFACE
TIMING
CSO
SDA
SCL
USS
DAVN
EHB
TI
PDC-Option
Pos 2601: 220n for PDC only
Pos 3605: 6k8 for PDC only
Pos 2602: 33n for PDC only
5VAS
GNDA
SCART 2
SCRAMBLE
1954
VideoIn
VideoOut
red/c
green
blue
blanking
Swtching
AudInL
AudOutL
AudInR
AudOutR
7562 BC858B
7560 BFS19
7550 BC818-40
7580 BC848B
7509 BC858B
7590 HEF4053BT
7591 HEF4053BT
7510 BFS19
7511 BC858B
7540 BC848B
6565 BAV70
6552 1N4148
6551 1N4148
6567 1N4148
BZX79-C12
BZX79-C18
+12A
-7V
VIN1
VIN2
ES1
ES2
AE12
AIN1
AIN2
AFV
VFV
SCRTV
FOR OSD ONLY
DELETE FOR OSD
VOU
SCRT
BLANKING
AOU

...V MEASURED IN PLAYBACK MODE

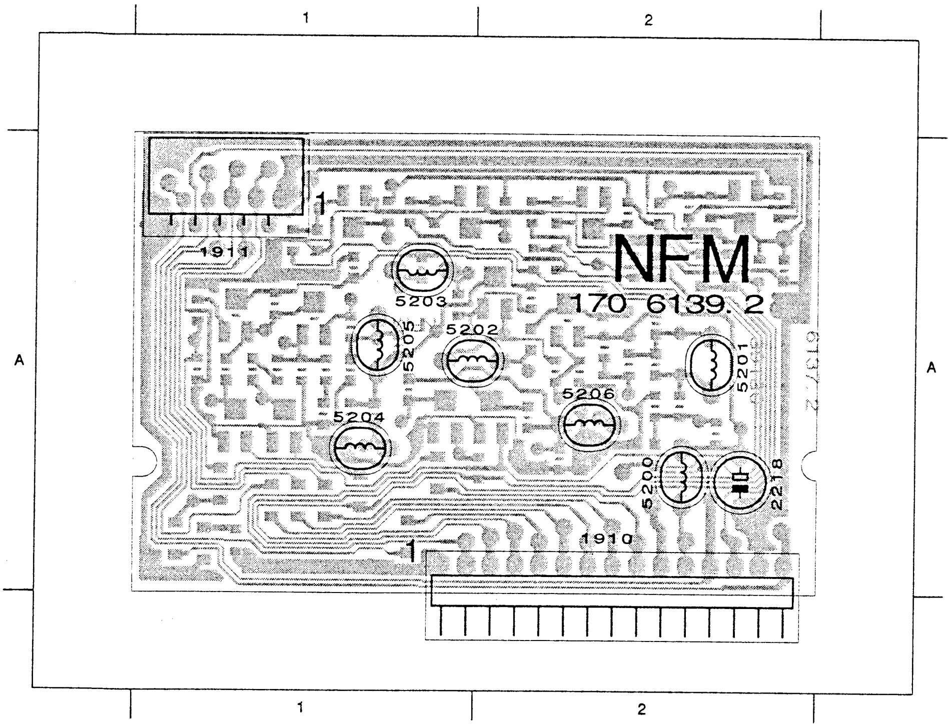

16
17
18
19
20
21
22
23
A
B
C
D
E
F
G
H
I
J
K
+12A
3511
470E
11,6V
7511
BC858B
2510
100n
GNDA
11,6V
2,6V
7510
BFS19
2,0V
3512
1k2
3510
1k
3516
33E
VOUT1
SCRTV
6565
BAV70
ES2
VE12
VIN1
0,7V
VIN1
0V
VFV
6567
1N4148
5VAS
ES1
VFV
7593
BC848B
3507
470E
FOR OSD ONLY
0,5V
AIN1
0V
AIN2
3998
0E
DELETE FOR OSD
3994
0E
AE12
AMLP
-0,5V
AIN1
0V
AFV
AOUT1
BLANKING
1951
1 AOUT1
2 AIN1
3 GNDA
4 VFV
5 GNDA
6 blue
7 pin10
8 green
9 SCRTV
10 ES2
11 red
12 BLANKING
13 AMLP
14 AFV
15 VIN1
+12A
1952
1 GNDA
2 VOUT1
3 AE12
4 -7V
5 +12A
6 VTX
7 VE12
8 ES1
9 VSB
10 FOME
11 VIDOUT
12 5VAS
13 SCL
14 SDA
15 8SC2
1953
1 IOFP
2 CSYNC
3 CHECK
4 NC
5 +5D
6 GNDD
+5D
GNDD
FUNCTION TABLE
IC 4053
TO FAMILY BOARD
IN/OUT CONNECTOR 1591
TO FAMILY BOARD
IN/OUT CONNECTOR 1591
TO FAMILY BOARD
IN/OUT CONNECTOR 1591
NIO
A.N. 9411.6

FUNCTION TABLE
IC 4053

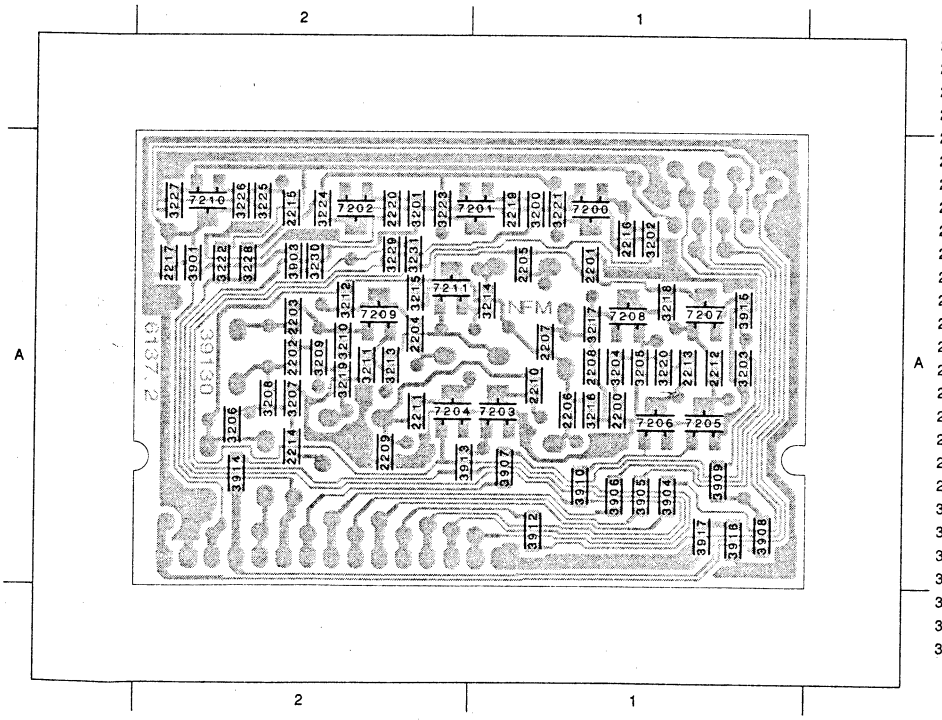
S	CHANNEL ON
L	Y0 - Z
H	Y1 - Z

1951	A21
1952	E21
1953	I21
1954	E 1
2510	A18
2511	B15
2541	J13
2560	E 5
2561	F 8
2570	H 2
2571	J 2
2580	K 2
2581	K 4
2590	B14
2591	G14
2600	B 4
2601	B 4
2602	D 5
2603	D 6
2605	D 6
3507	G17
3508	A12
3509	A12
3510	C16
3511	B16
3512	C17
3513	B15
3514	C15
3515	B15
3516	C17
3541	J13
3542	J12
3550	E 4
3551	H 8
3560	G 6
3561	E 7
3562	F 6
3563	F 8
3564	G 8
3565	F 9
3566	F 5
3567	F 5
3568	E 5
3570	H 3
3571	I 3
3572	J 3
3581	K 3
3582	K 4
3583	K 5
3584	K 3
3600	B11
3601	B11
3602	B 4
3603	A 4
3604	D 4
3605	C 5
3606	D 5
3607	B 5
3608	A 5
3609	A 6
3610	D 6
3611	D 5
3991	A15
3992	E12
3993	J10
3994	H16
3998	G17
6550	E 4
6551	E10
6552	D 9
6560	F 3
6561	F 4
6562	G 4
6563	G 4
6564	H 4
6565	D16
6567	F17
6570	H 3
6571	J 3
6580	K 2
6590	H 3
7509	B12
7510	B16
7511	B17
7540	I12
7550	H 7
7560	F 7
7562	F 6
7580	J 4
7590	B13
7590	D12
7590	E15
7591	G15
7591	I15
7591	I10
7593	F19
7600	B 9

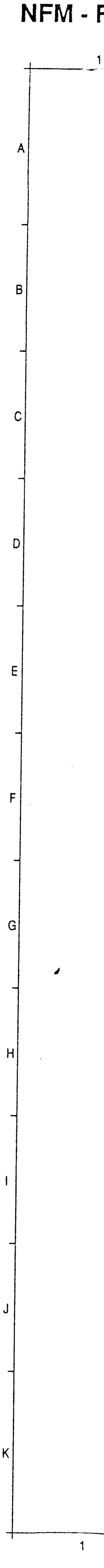
NFM BOARD N4


1
2
A
1911
1
NFM
170 6139.2
5203
5205
5202
5201
5206
5204
5200
2218
1910
1
6137.2

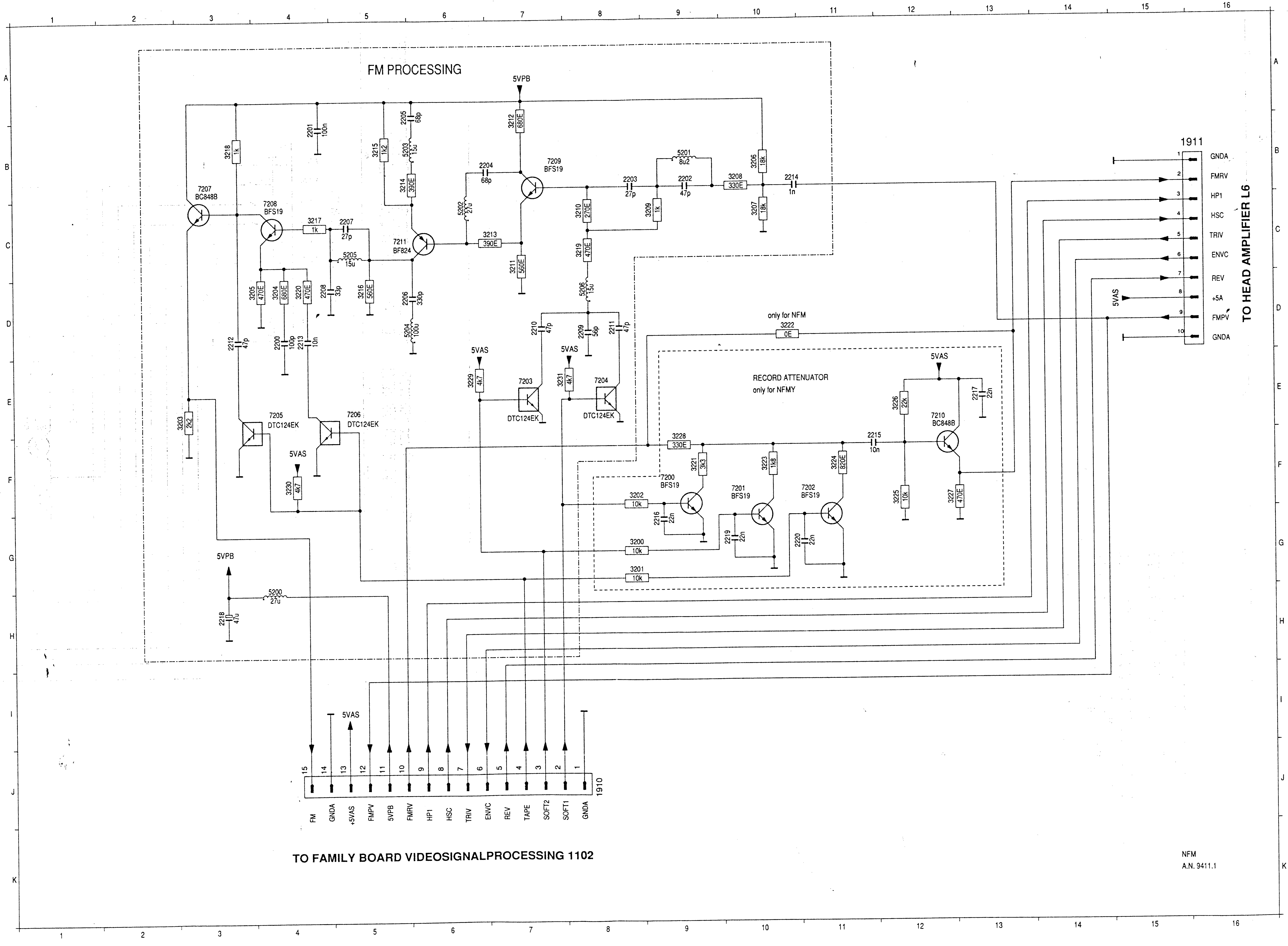
1910	A	2
1911	A	1
2218	A	2
5200	A	2
5201	A	2
5202	A	1
5203	A	1
5204	A	1
5205	A	1
5206	A	2


2
1
A
NFM
6137.2
39130
7210
7202
7201
7200
7211
7209
7208
7207
7204
7203
7206
7205

2200	A	1	3207	A	2	3904	A	1
2201	A	1	3208	A	2	3905	A	1
2202	A	2	3209	A	2	3906	A	1
2203	A	2	3210	A	2	3907	A	1
2204	A	2	3211	A	2	3908	A	1
2205	A	1	3212	A	2	3909	A	1
2206	A	1	3213	A	2	3910	A	1
2207	A	1	3214	A	1	3912	A	1
2208	A	1	3215	A	2	3913	A	2
2209	A	2	3216	A	1	3914	A	2
2210	A	1	3217	A	1	3915	A	1
2211	A	2	3218	A	1	3916	A	1
2212	A	1	3219	A	2	3917	A	1
2213	A	1	3220	A	1	7200	A	1
2214	A	2	3221	A	1	7201	A	1
2215	A	2	3222	A	2	7202	A	2
2216	A	1	3223	A	2	7203	A	1
2217	A	2	3224	A	2	7204	A	2
2219	A	1	3225	A	2	7205	A	1
2220	A	2	3226	A	2	7206	A	1
3200	A	1	3227	A	2	7207	A	1
3201	A	2	3228	A	2	7208	A	1
3202	A	1	3229	A	2	7209	A	2
3203	A	1	3230	A	2	7210	A	2
3204	A	1	3231	A	2	7211	A	2
3205	A	1	3901	A	2			
3206	A	2	3903	A	2			


NFM - F
1
A
B
C
D
E
F
G
H
I
J
K
1

NFM - FM PROCESSING


N4
FM PROCESSING
5VPB
3212 680E
2201 100n
2205 68p
5203 15u
3218 1k
3215 1k2
3214 390E
2204 68p
7209 BFS19
5201 8u2
3206 18k
7207 BC848B
7208 BFS19
3217 1k
2207 27p
5202 270
2203 27p
2202 47p
3208 330E
2214 1n
3210 270E
3209 1k
3207 18k
7211 BF824
3213 390E
3219 470E
5205 15u
3211 560E
3205 470E
3204 680E
3220 470E
2208 33p
3216 560E
2206 330p
5206 15u
2212 47p
2200 100p
2213 10n
5204 100u
2210 47p
2209 56p
2211 47p
only for NFM
3222 0E
5VAS
3229 4k7
3231 4k7
7203 DTC124EK
7204 DTC124EK
RECORD ATTENUATOR
only for NFMY
3226 22k
2217 22n
7210 BC848B
3203 2k2
7205 DTC124EK
7206 DTC124EK
3228 330E
2215 10n
3221 3k3
3223 1k8
3224 820E
3230 4K7
7200 BFS19
7201 BFS19
7202 BFS19
3202 10k
2216 22n
2219 22n
2220 22n
3225 10k
3227 470E
3200 10k
3201 10k
5200 27u
2218 47u
1911
1 GNDA
2 FMRV
3 HP1
4 HSC
5 TRIV
6 ENVC
7 REV
8 +5A
9 FMPV
10 GNDA
TO HEAD AMPLIFIER L6
1910
15 FM
14 GNDA
13 +5VAS
12 FMPV
11 5VPB
10 FMRV
9 HP1
8 HSC
7 TRIV
6 ENVC
5 REV
4 TAPE
3 SOFT2
2 SOFT1
1 GNDA
TO FAMILY BOARD VIDEOSIGNALPROCESSING 1102
NFM
A.N. 9411.1
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
A B C D E F G H I J K

1910	J 8
1911	B15
2200	D 4
2201	B 4
2202	B 9
2203	B 8
2204	B 7
2205	A 5
2206	D 5
2207	C 5
2208	D 4
2209	D 8
2210	D 7
2211	D 8
2212	D 3
2213	D 4
2214	B10
2215	F11
2216	G 9
2217	E13
2218	H 3
2219	G10
2220	G10
3200	G 8
3201	G 8
3202	F 8
3203	E 3
3204	D 4
3205	D 4
3206	B10
3207	C10
3208	B10
3209	C 9
3210	C 8
3211	C 7
3212	B 7
3213	C 7
3214	B 5
3215	B 5
3216	D 5
3217	C 4
3218	B 3
3219	C 8
3220	D 4
3221	F 9
3222	D10
3223	F10
3224	F11
3225	F12
3226	E12
3227	F12
3228	F 9
3229	E 6
3230	F 4
3231	E 7
5200	H 4
5201	B 9
5202	C 6
5203	B 6
5204	D 6
5205	C 5
5206	D 8
7200	F 9
7201	F10
7202	F11
7203	E 7
7204	E 8
7205	E 4
7206	E 5
7207	B 3
7208	C 4
7209	B 7
7210	E12
7211	C 5

207	A 2
208	A 2
209	A 2
210	A 2
211	A 2
212	A 2
213	A 2
214	A 1
215	A 2
216	A 1
217	A 1
218	A 1
219	A 2
220	A 1
221	A 1
222	A 2
223	A 2
224	A 2
225	A 2
226	A 2
227	A 2
228	A 2
229	A 2
230	A 2
231	A 2
3901	A 2
3903	A 2
3904	A 1
3905	A 1
3906	A 1
3907	A 1
3908	A 1
3909	A 1
3910	A 1
3912	A 1
3913	A 2
3914	A 2
3915	A 1
3916	A 1
3917	A 1
7200	A 1
7201	A 1
7202	A 2
7203	A 1
7204	A 2
7205	A 1
7206	A 1
7207	A 1
7208	A 1
7209	A 2
7210	A 2
7211	A 2

4. DRIVE ASSEMBLY

This tape deck has three motors; one providing precision drive for the scanner unit; the second providing direct drive for the capstan and belt drive for the reel tables; the third motor drives the lift and tape threading/dethreading operations.

Special features are:

Quick start
Short winding time
Automatic cleaning of video heads by cleaning roller

To obtain a high repair standard we have developped a range of service kit's. These kit's covers the spare parts which are engaged together.

4.1 Deck parts replacement

Before repairing a deck assembly the top and bottom covers should be removed.
The procedure for the removal and refitting of the following parts is described; only the lift, the scanner, the capstan motor and the A/C head are fixed by screws.
All the other deck assembly parts are held only by snap hooks.

Manual extraction of cassette:
If, after the Eject button has been pressed, the drive does not unthread and eject the cassette, the dethreading/eject operation can also be carried out manually by turning the wheel at the rear of the threading motor.

To avoid slack tape, alternate this action with the movement of the capstan motor (counter-clockwise), until the tape is completely taken into the cassette.

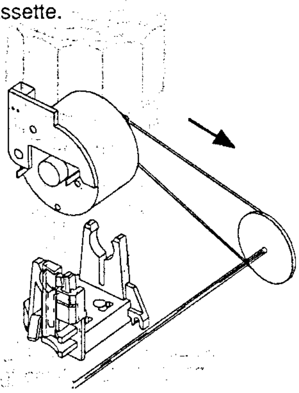
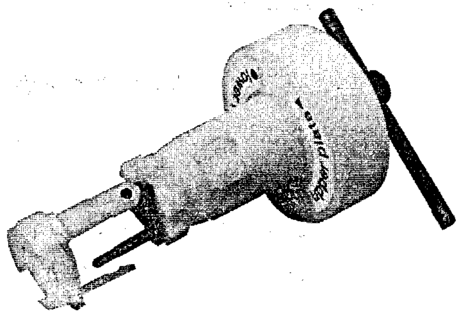


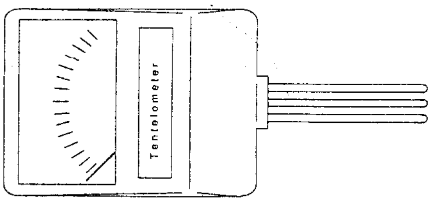
Fig. 1

IMPORTANT:
After each repair has been carried out in the drive assembly, the first operation after repairing must be to bring the cassette compartment into "eject" position by hand.

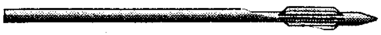
Auxiliary tools for deck adjustment:



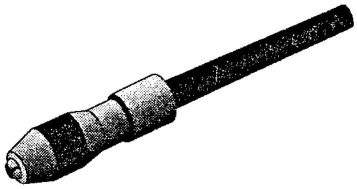
Tool for removing the head disc 4822 395 90977



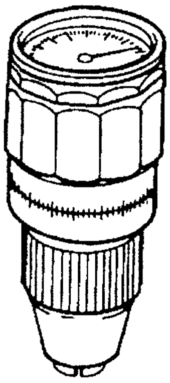
Tentelometer 4822 395 90584



Tool for tapetension adjustment 4822 395 50188

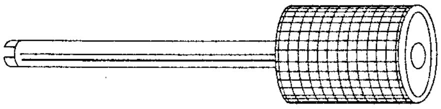


Handle 4822 256 90493



Torquemeter:

600 gf-cm 4822 395 90232
90 gf-cm 4822395 80196



Post adjustment screwdriver 4822 395 50275

Testcassette 4822 397 30103

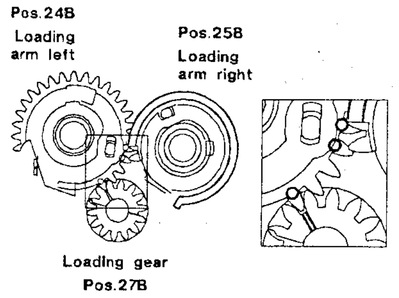
Nylon gloves 5322 395 94022

4.1.1 Deck lay out diagram

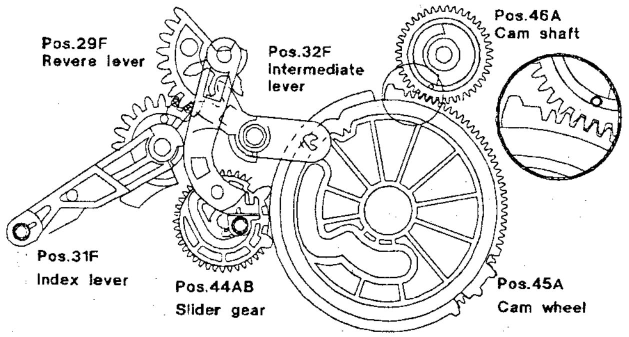
Deck in position "threaded out".

The following diagrams indicate the relative position of the gearwheels and levers when the deck is in the threaded out (cassette compartment down) position.

Top view


Pos.24B
Loading arm left
Pos.25B
Loading arm right
Loading gear
Pos.27B

Top view


Pos.29F
Revere lever
Pos.32F
Intermediate lever
Pos.46A
Cam shaft
Pos.31F
Index lever
Pos.44AB
Slider gear
Pos.45A
Cam wheel

4.1.2 The Lift

Refitting the lift compartment:
Ensure the lift compartment is down and gear A is rotated one click stop anticlockwise from the down position.
The removal and refitting of the lift can be carried out in all deck positions with the exception of "eject" (ensure that gears 103/105 are free).

To remove the lift

- Free the holding bracket (Fig. 2) by rotating it up and back from the upper end.
- Unscrew the 4 screws on the underside of the deck.
- Carefully remove the lift vertically, noting the position of the record protect operating lever.

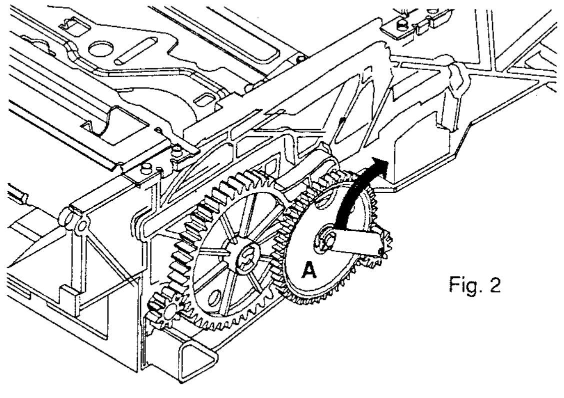
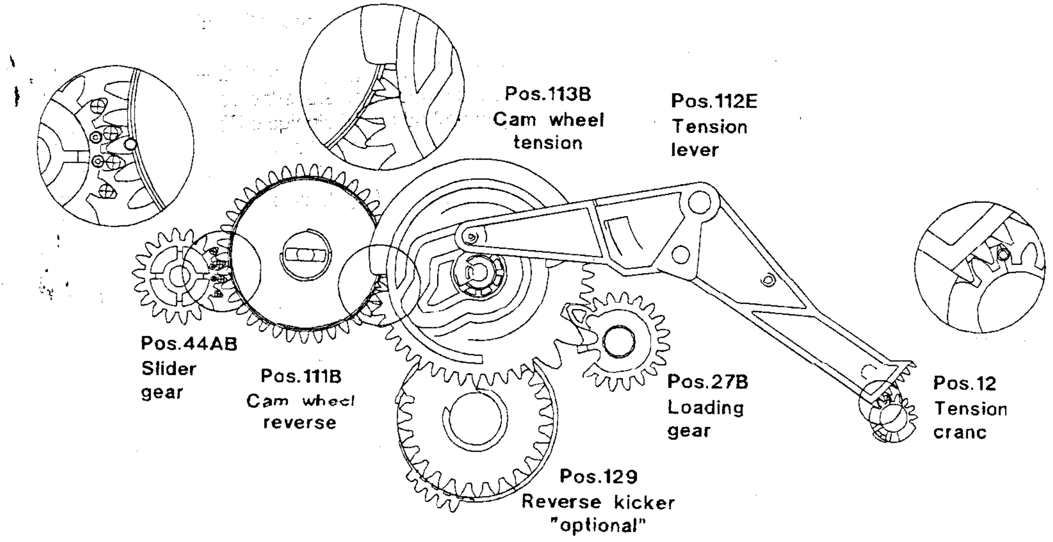


Fig. 2

Underside view


Pos.113B
Cam wheel tension
Pos.112E
Tension lever
Pos.44AB
Slider gear
Pos.111B
Cam wheel reverse
Pos.27B
Loading gear
Pos.12
Tension cranc
Pos.129
Reverse kicker "optional"

4.1.3 Head disc replacement

Removal :

- Nylon gloves should be worn when handling the head disc.
- Turn the headdisc until the long hole of the rotor appears in the bigger hole of the scannermotor
- Insert the reference pin C (included with each service head disc) through the bigger hole of the lid of the scanner motor until the pin snaps in the long hole of the rotor. (Fig. 3)

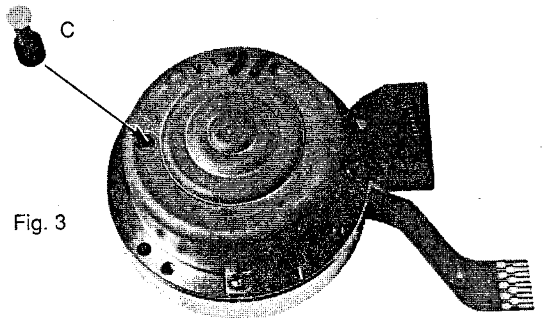


Fig. 3

Important:
Choose Installation/Removal of the upper/lower clamping element by turning and attaching the reference element to the tool. (Fig. 4)

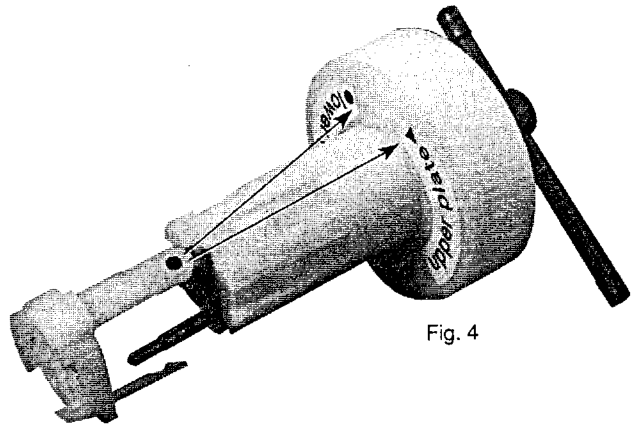
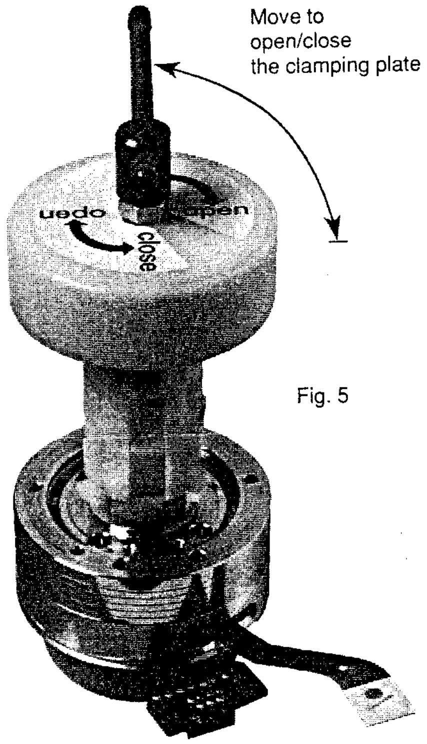

upper plate

Fig. 4



Move to open/close the clamping plate

Fig. 5

- Position the tool on the upper clamping element, loosen the clamping element by turning the lever 90 degrees and remove it from the head disc. (Fig. 5)

- Prepare the tool for the lower clamping element.Position the tool on the head disc and make sure that all 3 pins are snapped in the the lower clamping element. Loosen the clamping element by turning the lever 90 degrees and remove the head disc plus the tool from the scanner spindle. (Fig.6)

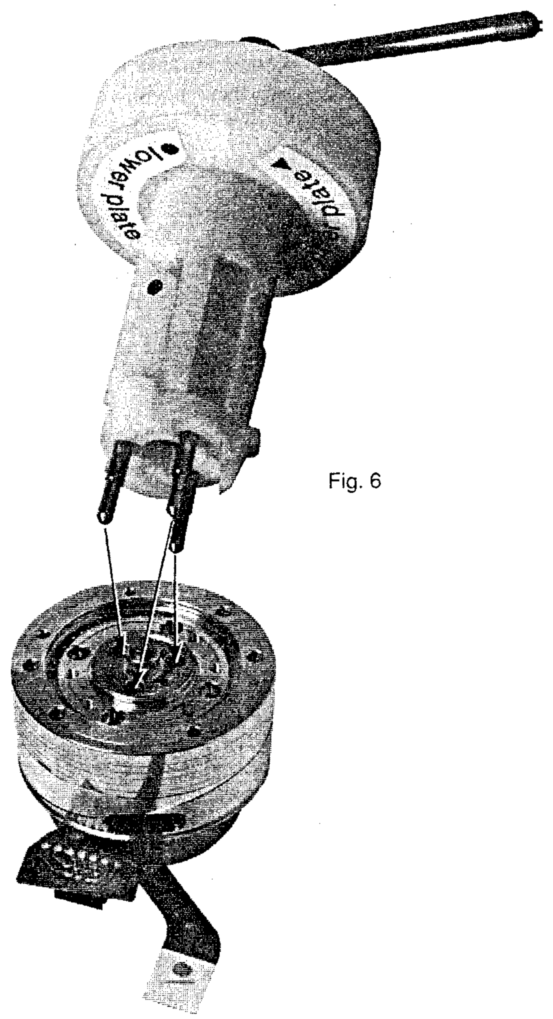

lower plate

Fig. 6

Installation:

- Before carrying out the installation of the new head disc make sure that the scanner motor spindle is clean and undamaged. (The spindle has to be free of grease and must not be touched with bare hands)
- Insert the 2 Mylar foils (included with each head disc) in the head disc. (Fig.7)

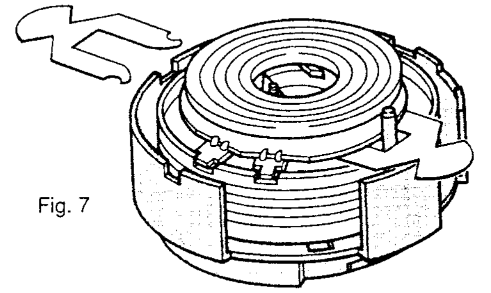


Fig. 7

- Position the tool (reference: lower clamping element) on the new headdisc (with protective cover) and loosen the lower clamping element.
- Position the head disc so that pin D of the protective cover engages in the hole of the stator (the arrow on the protective cover must point towards the scanner print). (Fig. 8)

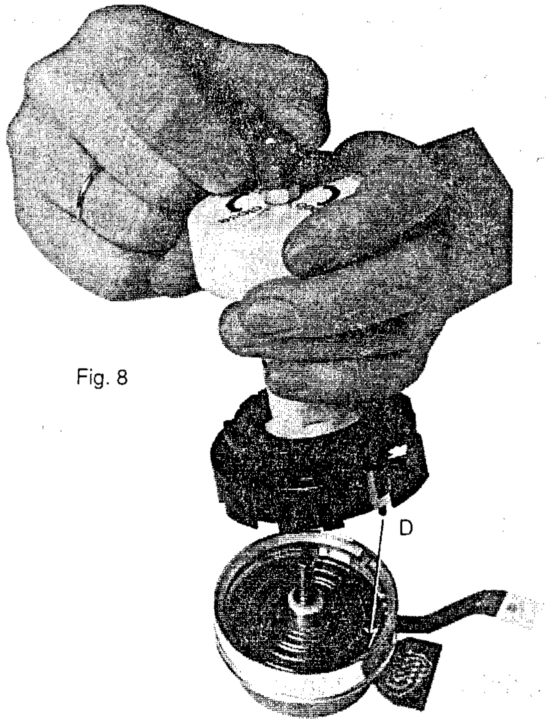
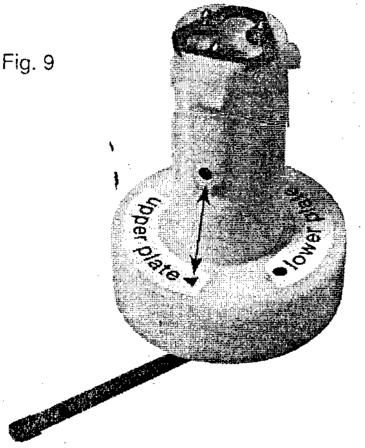


Fig. 8

- Reach the exact position through pressing the tool down with a force of 1 N. and fix the lower clamping element by turning the lever towards "close".
- Remove the tool.
- Change the tool to "upper clamping element" and position the clamping element exactly. (Fig. 9)

Fig. 9



- Tighten the clamping element through turning the lever towards "open".
- Position the tool planely on the head disc and fix the clamping element. (Fig.5 "close")
- Remove the protecting cap from the head disc, withdraw the two Mylar foils and remove the reference pin C.

After replacing the head disc, carry out the following adjustments and checks :

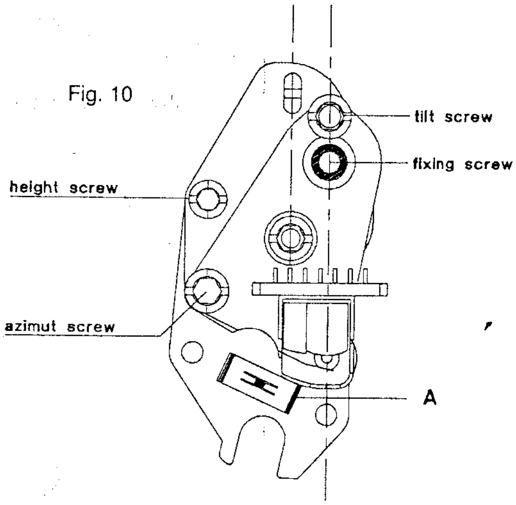
- Head switching pulse (gap position, chapter 3)
- Write current adjustments (chapter 3)
- Check tape path alignment. (see paragraph 4.2.1.)

4.1.4 A/C Head (Combi head) (Pos. 36)

- Remove fixing spring (A) (Fig. 10).
- Remove the fixing screw and replace the A/C head.
- Use a new fixing spring (included with new A/C head) for reassembly.

After the A/C head has been replaced, all adjustments described in paragraph 4.2.1.2 and paragraph 4.2.1.3 have to be carried out.

Fig. 10



4.1.5 Threading motor (Pos. 38)

- Remove the belt and disconnect the connector plug.
- Remove the threading motor from the motor supports (Fig. 11).

During reassembly ensure that the threading motor is correctly located in the front and rear supports.

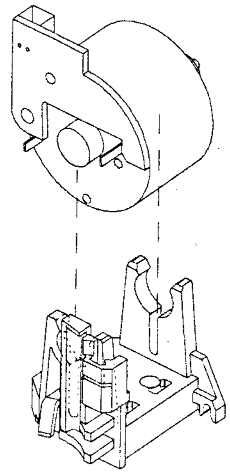


Fig. 11

4.1.6 Capstan motor (Pos. 127)

- Set the drive assy to "Eject" position.
- Remove the belt (pos.126) on the underside; then free the pin from the sensor print (see section 4.1.10). Lift sensor print part vertically (it is plug and socket connected to the capstan motor print). Move both sections of the sensor print clear of the capstan motor.
- Remove the three capstan motor fixing screws (Fig. 12) and withdraw the capstan motor downward from the drive assy.

The reassembly is carried out in reverse order. Make sure that the capstan is free of grease.

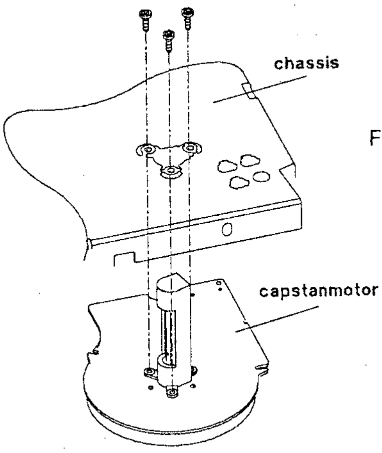


Fig. 12

4.1.7 Pressure roller (Pos. 37)

- Set the drive assy to "Eject" position.
- Unhook and remove the pressure roller tension spring.
- Release the pressure roller guide (pos. 41G) from the guide in the threading motor holder by pressing the top of the motor guide rearwards and rotating the pressure roller guide assembly clockwise by approximately a quarter of a turn.(see Fig. 13) The pressure roller and guide can now be lifted clear.

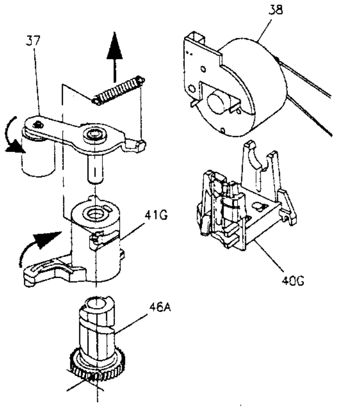
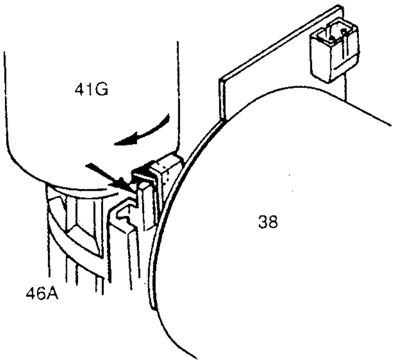


Fig. 13



Ensure that no grease from the pressure roller guide gets to the capstan or pressure roller.
The reassembly is carried out in reverse order.

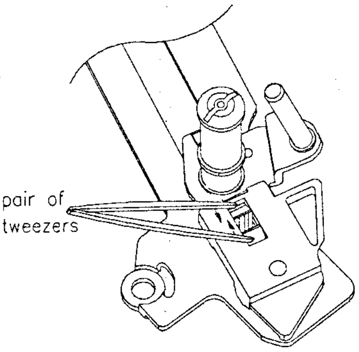
4.1.8 Roller unit right (Pos. 26)

- Set the drive assy to "Eject" position.
- Compress the two snap hooks by means of a pair of tweezers and remove the roller assy from the roller unit right (Fig. 14).
- Unhinge the loading arm right from the holding plate and push the latter towards the front of the deck to remove from the guide (right).

NOTE: During reassembly ensure the link from 25B is engaged in the hole of the holder plate 26

After replacing the roller unit (right), the tape path has to be checked, and adjusted if necessary (paragraph 4.2.1).

Fig. 14



4.1.9 Roller unit left (Pos.23)

- Set the drive assy to "Eject" position.
- Unhook the tension arm spring (pos. 11), to avoid the tension arm spring being pre-loaded.
- At the bottom side of the drive assy, partially unhinge the sensor mounting print and remove the tension lever (pos.112).
- Compress the two snap hooks by means of a pair of tweezers (Fig. 9)and remove the roller assy (A) from the plate (B).
- Unhinge the loading arm (left) from the holding plate and remove the latter downward from the drive assy through the recess in the chassis (Fig. 15).

The reassembly is carried out in reverse order.

NOTE: During reassembly
1. Place the carriage holding plate in the assembly with the half-round cutout nearest the rear of the deck.
2. When the loading arm is refitted ensure the pin on the underside of 23 is through the link of 24B.

After replacing the roller unit (left) the tape path has to be checked (paragraph 4.2.1.), and adjusted if necessary.

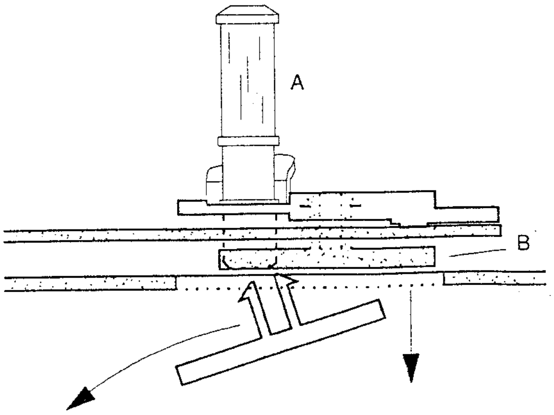


Fig. 15

4.1.10 Sensor print assy (Pos. 118)

For circuit diagram and electrical data see deck electronics (chapter 3).
If a part of the sensor print is defective the whole sensorprint has to be replaced.
Proceed as follows:

- Remove the deck assembly from the set.
- Lift the sensor print vertically, it is plug and socket connected to the capstan motor print.
- All other parts are attached by means of snap hooks and are easily freed.

Reassembly is carried out by snapping the snap hooks into place, and inserting the rivet B.

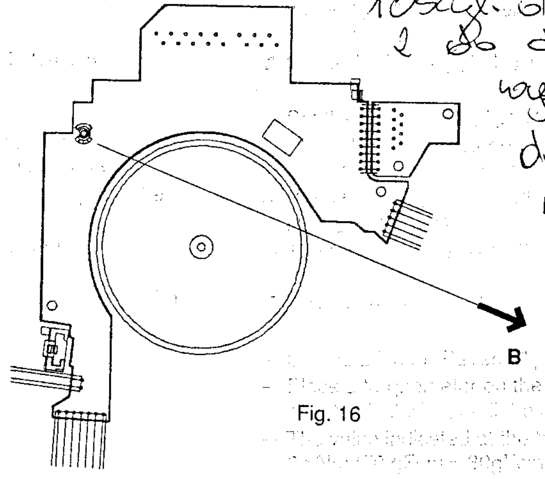


Fig. 16

1 oscyl. do impulsu w
2 do triv

wyzwalanie oscyl.
do HP1
zewnętrznie

4.2 Adjustments

4.2.1 Tape path

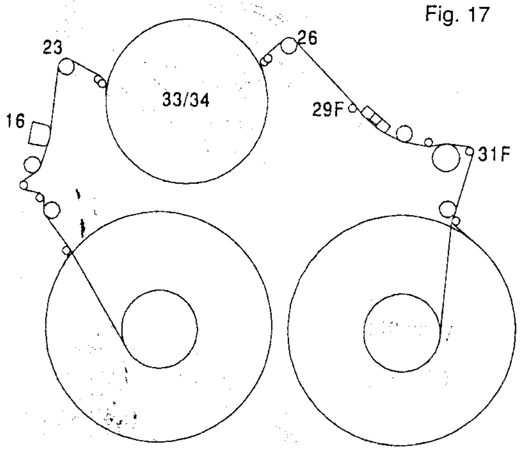


Fig. 17

4.2.1.1 Roller left unit/roller unit right

Preparation:

- Connect one input of a dual trace oscilloscope to observe the tape sync pulse CTL.The other input (DC coupled) to observe the tracking information TRIV.
- Trigger the oscilloscope externally on the head pulse HP1.
- Playback the black and white section of the alignment test tape.
- Set the deck in the condition where the video heads are running along the upper edge of the tracks only by:

1. Pressing the auto tracking button and watch the tape sync pulse move to the left in relation to the TRIV signal.
2. Note the extreme left hand position reached by the sync pulse, repeat as necessary.
3. Stop the movement of the pulse when the TRIV signal reduces to 1/2 to 2/3 maximum amplitude by pressing the normal play button.

A noisy picture (disturbances) is visible on the TV set and the CTL pulse should be to the left of the display.
The machine will retain this position in memory until an eject is carried out. This condition works only if X-distance is adjusted.

Adjustment:
Adjust the left and right roller units to make the tracking signal TRIV straight and flat as possible (Fig. 18).

lekko podniesione

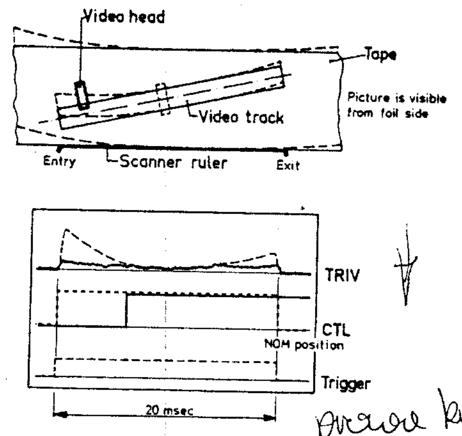


Fig. 18

prawa krawędź
na krańcu impulsu

4.2.1.2 A/C Combi head

Tilt angle adjustment

- Set the drive to feature mode (e.g. +7)

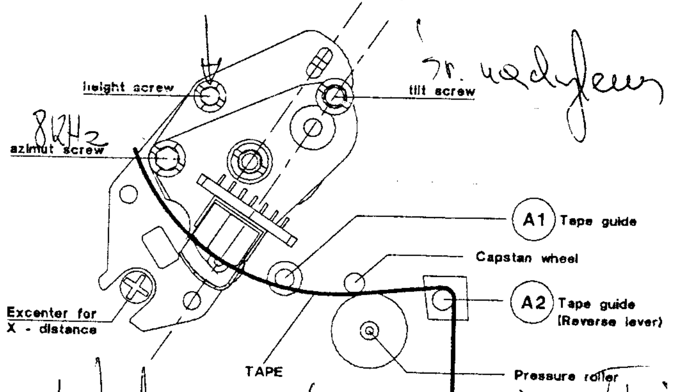
Adjustment **with** tape guide A1:

- By means of the tilt angle adjusting screw move the tape until the lower edge just touches the tape guide A1 (see Fig. 19) the tape must not be distorted at the lower edge (by pressing onto guide).

Adjustment **without** tape guide A1:

- By means of the tilt angle adjustment screw move over the tape until the lower edge just touches the tape guide A2 (see fig.19) (by pressing onto guide).After that turn the tilt angle adjustment screw anticlockwise for 60°- 90° (The tape must not touch guide A2).

400Hz ustaw amp. max



8kHz

śr. nachylenia

W-tylne serwisowym

Fig. 19

imp TRIV

max napięcia

Adjustment of the azimuth angle and the head height

- Connect an oscilloscope to the linear Audio output.
- Play the section of the test cassette with the audio signal 400 Hz.
- Adjust for maximum output voltage by means of the height adjustment screw
- Play the section of the test cassette with the audio signal 8 kHz.
- Adjust to maximum output voltage by means of the azimuth adjustment screw (Fig. 19).
- If necessary, repeat this procedure
- Check the tilt angle adjustment

If the tape path was completely out of adjustment or if several components in the tape path have been replaced, it is possible, that the adjustments described in paragraph 4.2.1.1 and paragraph 4.2.1.2 have to be repeated several times.

4.2.2 Adjustment of the horizontal distance (x-distance)

- Before this adjustment is carried out, insert the test cassette (start from Eject position). Call the service test program (tracking value will take up its nominal position) and press the "play" button.
- Playback the black/white part of the test caśsette.)
- Display the TRIV signal on an oscilloscope (DC-coupled) and adjust for maximum voltage by means of the eccentric screw (Fig.19).

4.2.3 Brake band adjustment

- Set the drive to "Play"
- Adjust the brake band by means of adjusting tool (from the underside of the drive), until the edge of the elbow of the tape tension arm overlaps with the left inner edge of the left guide by 0.5mm (see Fig. 20)

4.2.4 Tape tension adjustment

- Play a VCR cassette (E 180) starting from the beginning of the tape.
- Measure the tape tension before the roller unit left by means of a tentelometer.
- Adjust the tension arm spring (pos.11) to a tape tension of 0,24 N ± 0,02 N (24 g ±2 g) by means of the adjustment tool (from the underside of the drive, Fig. 20).

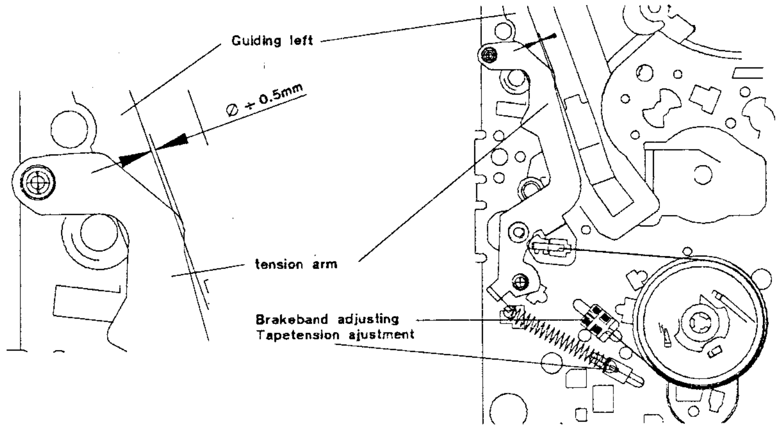
4.2.5 Friction clutch control check

- Set the drive to "Play" position.
- Place the torquemeter on the right reel.
- Turn the capstan motor to move the right reel clockwise.
- Keep turning, until the indication at the torquemeter no longer changes (Fig. 21)
- The torque has to be 10,5 mNm ± 25% (105gFcm ±25%)

4.2.6 Reverse brake control

- Set the drive to "Reverse" position.
- Place a torquemeter on the right reel and turn the latter counterclockwise, until the reel just starts to flip.
- The value indicated at the torquemeter has to be 7mNm± 3mNm (70 gFcm ± 30gFcm) (Fig. 21).

Fig. 20



300g

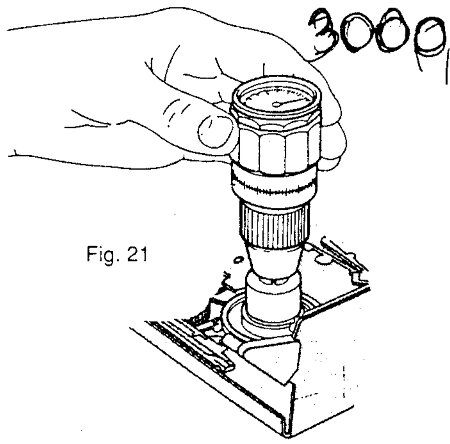
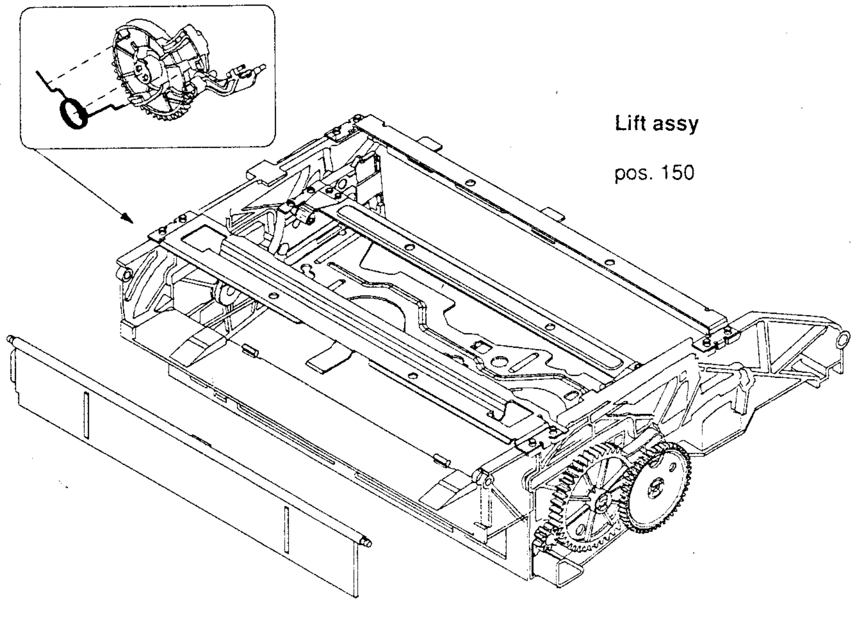


Fig. 21



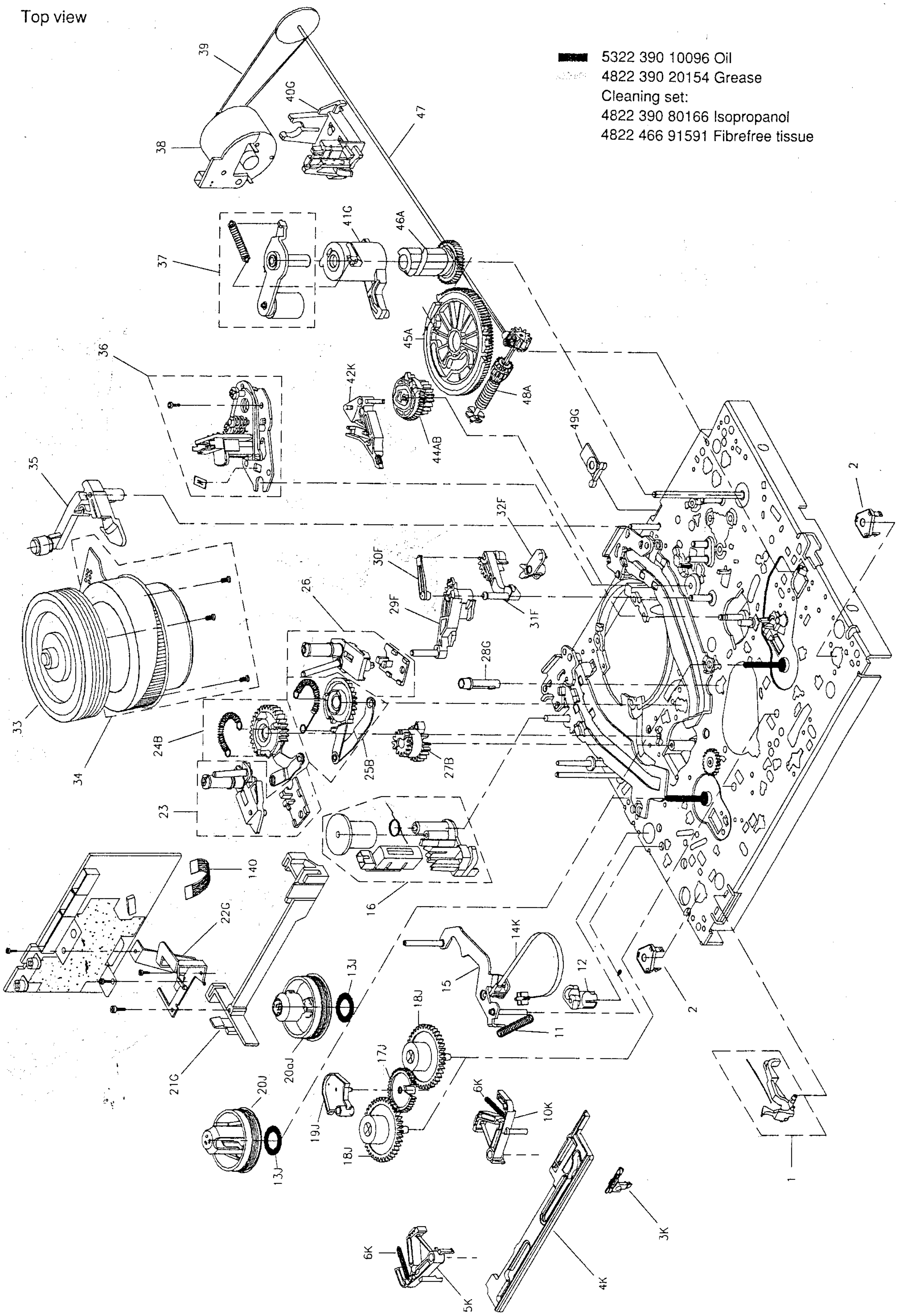
Lift assy

pos. 150

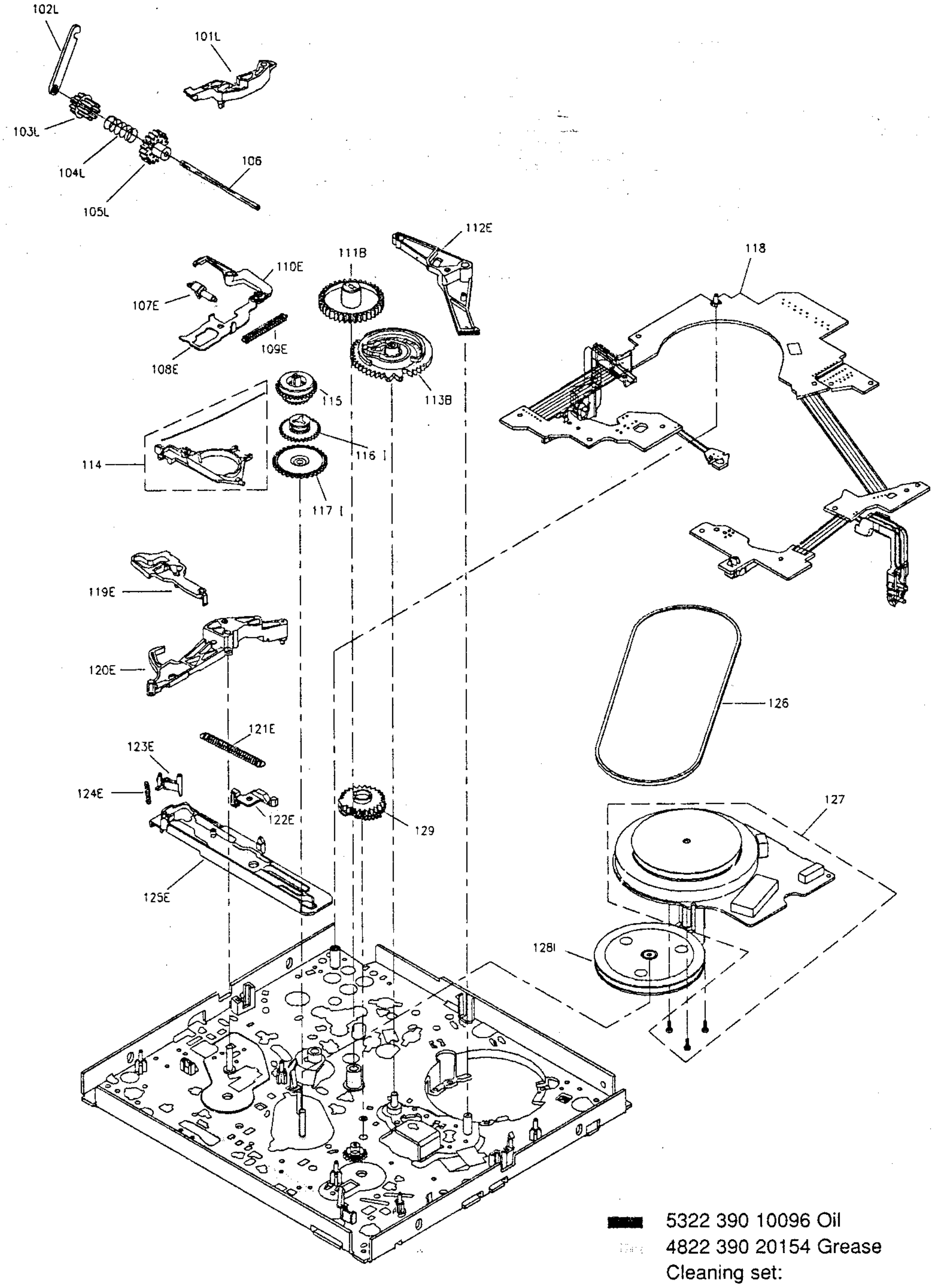
4.3 Exploded view

Top view

▬ 5322 390 10096 Oil
▨ 4822 390 20154 Grease
Cleaning set:
4822 390 80166 Isopropanol
4822 466 91591 Fibrefree tissue


39
40G
47
38
37
41G
46A
45A
48A
36
42K
44AB
49G
35
32F
30F
29F
31F
26
28G
2
33
34
24B
25B
27B
23
16
140
22G
14K
15
12
11
13J
18J
20aJ
21G
20J
17J
19J
6K
10K
13J
18J
2
1
3K
4K
6K
5K

Bottom view


102L
101L
103L
104L
105L
106
112E
111B
110E
118
107E
109E
108E
113B
115
116
117
114
119E
120E
126
121E
123E
124E
122E
129
127
125E
128I

■ 5322 390 10096 Oil
░ 4822 390 20154 Grease
Cleaning set:
4822 390 80166 Isopropanol
4822 466 91591 Fibrefree tissue

4.4 Partslist

Pos.	Description	KIT's									Code number 4822
		A	B	E	F	G	I	J	K	L	
1	Rec.protection lever (with spring)										403 70546
2	Chassis mounting spring (2x)										492 71022
3	Trigger lever								K		
4	Trigger slider								K		
5	Main brake left								K		
6	Main brake spring (2x)								K		
10	Main brake right								K		
11	Tension arm spring										492 33317
12	Tension crank										403 70551
13	Slip ring							J			
14	Tension band								K		
15	Tension arm										403 70547
16	Erase head										249 40293
17	Swivelling gear							J			
18	Brake gear (2x)							J			
19	Swivelling plate							J			
20	Reel table (S)							J			
20a	Reel table (T)							J			
21	Headamplifier holder					G					
22	Bracket					G					
23	Roller unit left										528 70771
24	Loading arm left		B								
25	Loading arm right		B								
26	Roller unit right										528 70772
27	Loading gear		B								
28	Light prism					G					
29	Index lever				F						
30	Reverse clip				F						
31	Reverse lever				F						
32	Intermediate lever				F						
33	Head disc 2/0										691 20926
33	Head disc 3/0										691 20937
33	Head disc 4/0										691 20938
34	Scanner motor 2/0 (with screws)										361 21548
34	Scanner motor 3/0 (with screws)										361 21549
34	Scanner motor 4/0 (with screws)										361 10658
35	Cleaning roller										528 70773
36	A/C Head (with clip and screws)										249 10468
37	Pressure roller (with spring)										528 70774
38	Threading motor										361 21486
39	Threading belt										358 20421
40	Motor holder					G					
41	Pressure roller guide					G					
42	Reverse brake								K		
44	Slider gear	A	B								

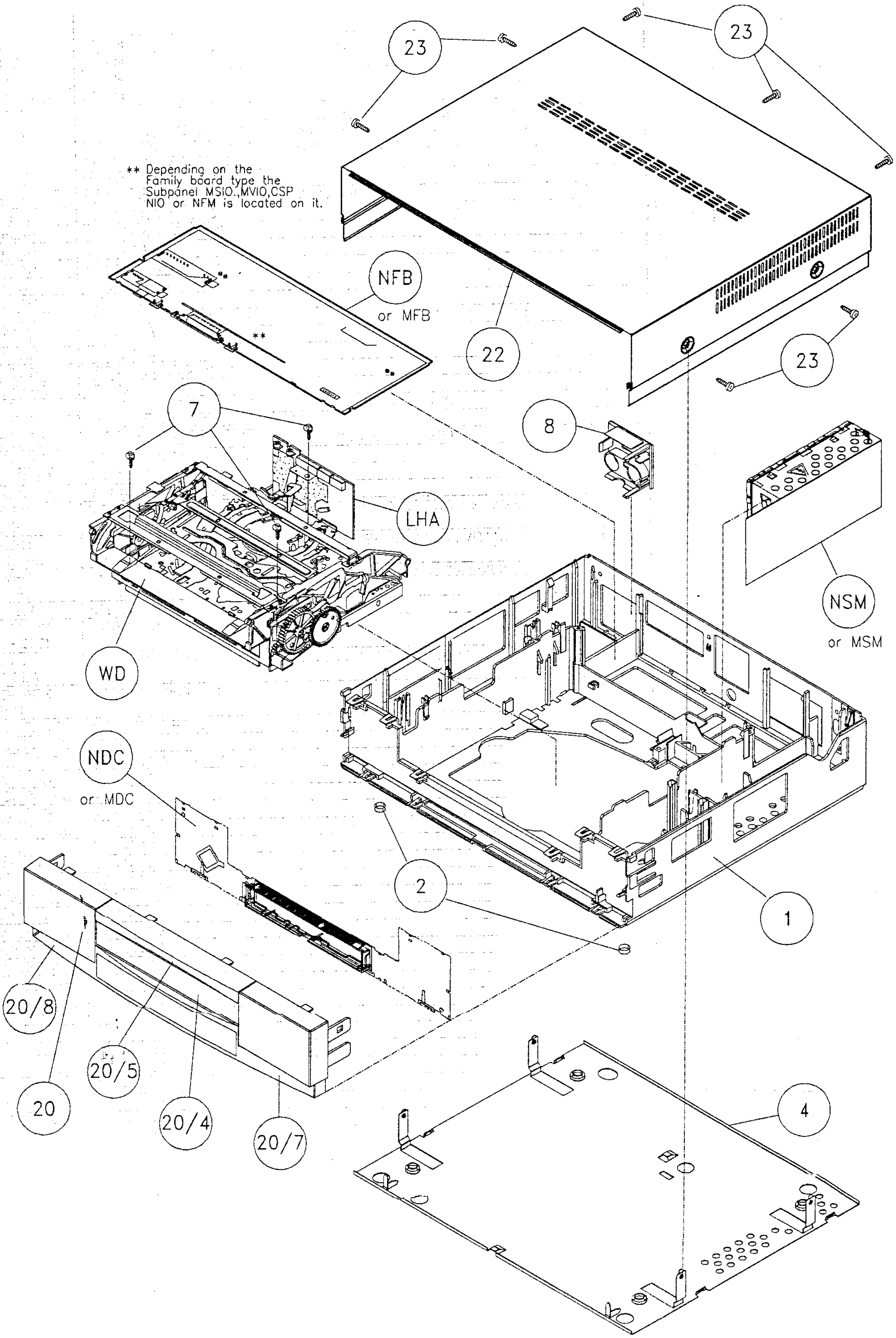
Pos.	Description	KIT's									Code number 4822
		A	B	E	F	G	I	J	K	L	
45	Cam wheel	A									
46	Cam shaft	A									
47	Pulley shaft										528 81462
48	Worm shaft	A									
49	Chassis mounting clip					G					
101	Casette loader trigger									L	
102	Clip									L	
103	Casette loader gear 1									L	
104	Casette loader spring									L	
105	Casette loader gear 2									L	
106	Spindle										535 93277
107	Pulse roller			E							
108	Pulse slider			E							
109	Pulse slider spring			E							
110	Pulse lever			E							
111	Cam wheel reverse		B								
112	Tension lever			E							
113	Cam wheel tension		B								
114	Clutch lever (with spring)										403 70549
115	Clutch										528 20736
116	Changing gear						I				
117	Double gear						I				
118	Sensor print S-VHS (with stud and rivet)										214 60155
119	Main slider lever			E							
120	Cam wheel lever			E							
121	Slider spring			E							
122	Clutch slider			E							
123	Slider lever trigger			E							
124	Slider lever spring			E							
125	Main slider			E							
126	Driving belt										358 31166
127	Capstan motor (with screws)										361 21484
128	Gear pulley						I				
129	Reverse kicker (with transmission gears) *)										522 20451
140	Flex cable										320 40287
150	Lift										443 64112
KIT	A										310 31954
KIT	B										310 31955
KIT	E										310 31958
KIT	F										310 31959
KIT	G										310 31961
KIT	I										310 31963
KIT	J										310 31996
KIT	K										310 31997
KIT	L										310 32116

For getting a high repairstandard all spare parts included in a kit have to be replaced with the exception of kit E and kit G.

*) optional

What are the benefits of service kits:
A better quality of repair (not only the defect part is replaced but also the related affected parts).
A faster repair (all the parts are already collected and are focussed on the problem).
A cheaper repair (parts are manufactured with the same parrts used for production, giving a high quality for lowest price).

EXPLODED VIEW SET


23
23
23
** Depending on the Family board type the Subpanel MSIO.,MVIO,CSP NIO or NFM is located on it.
NFB
or MFB
**
22
7
8
LHA
NSM
or MSM
WD
NDC
or MDC
2
1
20/8
20/5
20
20/4
20/7
4

PARTSLIST

Position	12 NC 4822...	Description	Set
1	464 50961	FRAME	all sets
2	462 41806	FOOT	all sets
4	443 51235	BOTTOM	all sets
7	502 13884	SCREW 3.4 x 16	all sets
8	443 63842	COVER	VR241/02/10, VR242/02, VR243/01/13, VR347/02/10, VR247/01/02/06, VR447/02
8	443 63843	COVER	VR2410/19, VR2419/39, VR2469/39, VR3419/39, VR3469/39,VR3479/39, VR4469/39, VR4479/39, 24DV10/19, 2SB41/11, 2SB410/18, 2SB419/38, 2SB469/38, 3SB47/11, 3SB419/38, 3SB469/38
20/4	443 64156	LIFT FLAP	VR241/02, VR242/02,
20/4	443 64158	LIFT FLAP	VR241/10, VR247/01, VR247/02, VR247/06
20/4	443 64167	LIFT FLAP	VR243/01, VR243/13
20/4	443 64168	LIFT FLAP	VR347/02, VR3469/39
20/4	443 64174	LIFT FLAP	VR347/10
20/4	443 64172	LIFT FLAP	VR447/02, VR3419/39
20/4	443 64184	LIFT FLAP	VR2419/39, VR2410/19, VR2469/39
20/4	443 64187	LIFT FLAP	VR4479/39
20/4	443 64185	LIFT FLAP	2SB41/11, 2SB410/18, 2SB419/38, 2SB469/38, 3SB47/11, 24DV10/19
20/4	443 64188	LIFT FLAP	VR3479/39
20/4	443 64195	LIFT FLAP	VR4469/39
20/4	443 64199	LIFT FLAP	3SB419/38, 3SB469/38
20/5	492 70896	LEG SPRING	all sets
20/7	462 42091	FOOT RIGHT	VR347/02, VR347/10, VR3419/39, VR3469/39, VR3479/39
20/7	462 42109	FOOT RIGHT	VR447/02, VR4479/39, VR4469/39
20/8	462 42092	FOOT LEFT	VR347/02, VR347/10, VR3419/39, VR3469/39, VR3479/39
20/8	462 42111	FOOT LEFT	VR447/02, VR4479/39, VR4469/39
20/9	443 64173	FLAP (CINCH)	VR447/02
20/9	443 64186	FLAP (CINCH)	VR4479/39, VR4469/39
22	444 60853	COVER LAQUERED	VR241/02/10, VR242/02, VR243/01/13, VR247/01/02/06, VR2419/39, VR2410/19, VR2469/39
22	443 64166	COVER LAQUERED	VR347/02, VR347/10, VR3419/39, VR3469/39, VR3479/39, VR447/02, VR4479/39, VR4469/39
22	443 64194	COVER LAQUERED	2SB41/11, 2SB410/18, 2SB419/38, 2SB469/38, 3SB419/38, 3SB469/38, 3SB47/11, 24DV10/19
23	502 13173	SCREW	all sets
168	459 10923	WORDMARK SCHNEIDER	24DV10/19
168	459 10896	WORDMARK RADIOLA	2SB410/18, 2SB419/38, 2SB469/38, 3SB419/38, 3SB469/38
168	459 10912	WORDMARK SBR	2SB41/11, 3SB47/11
20	443 41367	CONTROL PANEL	VR241/02, VR242/02
20	443 41371	CONTROL PANEL	VR241/10
20	443 41375	CONTROL PANEL	VR243/01, VR243/13
20	443 41377	CONTROL PANEL	VR247/01
20	443 41382	CONTROL PANEL	VR247/02
20	443 41404	CONTROL PANEL	VR247/06
20	443 41376	CONTROL PANEL	VR347/02
20	443 41381	CONTROL PANEL	VR347/10
20	443 41379	CONTROL PANEL	VR447/02
20	443 41392	CONTROL PANEL	VR2410/19
20	443 41384	CONTROL PANEL	VR2419/39
20	443 41388	CONTROL PANEL	VR2469/39
20	443 41383	CONTROL PANEL	VR3419/39
20	443 41389	CONTROL PANEL	VR3469/39
20	443 41395	CONTROL PANEL	VR3479/39
20	443 41397	CONTROL PANEL	VR4469/39
20	443 41387	CONTROL PANEL	VR4479/39
20	443 41402	CONTROL PANEL	2SB41/11
20	443 41396	CONTROL PANEL	2SB410/18
20	443 41385	CONTROL PANEL	2SB419/38
20	443 41399	CONTROL PANEL	2SB469/38
20	443 41398	CONTROL PANEL	3SB419/38
20	443 41401	CONTROL PANEL	3SB469/38
20	443 41403	CONTROL PANEL	3SB47/11
20	443 41386	CONTROL PANEL	24DV10/19

POWER SUPPLY NSM

CONNECTORS

	⚠	4822 267 31064	MAINS CONNECTOR
		4822 462 71855	COVER
		4822 265 41251	CONNECTOR 15 P.

MISCELLANEOUS

		4822 256 30514	FUSE HOLDER
1050	⚠	4822 070 31252	FUSE T1.25A

CAPACITORS

2015		4822 121 70482	2,7	nF	100V
2023		4822 121 70462	220	nF	63V
2025		5322 121 42386	100	nF	50V
2027		5322 121 42386	100	nF	63V
2030		4822 124 80873	47	nF	25V
2040		4822 121 70481	47	nF	400V
2050	⚠	4822 121 70163	100	nF	250V
2060	⚠	4822 122 33284	100	pF	250V
2061	⚠	4822 122 33284	100	pF	250V
2062	⚠	4822 124 80872	1	nF	400V
2064	⚠	4822 124 80872	1	nF	400V
2065	⚠	4822 121 70163	100	nF	250V
2070	⚠	4822 124 42104	68	µF	385V
2085		5322 121 42386	100	nF	50V
2102		4822 124 80874	47	µF	50V
2104		4822 124 80874	47	µF	50V
2110		4822 121 41856	22	nF	250V
2112		4822 121 51305	15	nF	50V
2114		4822 121 51299	1	nF	50V
2130		4822 122 31116	2,2	nF	400V
2134		4822 124 40739	680	µF	25V
2157		4822 124 80875	220	µF	25V
2185		4822 124 40739	680	µF	25V

RESISTORS

3005		4822 116 52283	4,7	kΩ	0,5W
3007		4822 117 11167	820	kΩ	0,5W
3011		4822 117 11166	360	kΩ	0,5W
3020		4822 116 52215	220	Ω	0,5W
3022		4822 116 52269	3,3	kΩ	0,5W
3027		4822 116 52233	10	kΩ	0,5W
3035		4822 116 52283	4,7	kΩ	0,5W
3040		4822 116 52233	10	kΩ	0,5W
3042		4822 116 52233	10	kΩ	0,5W
3044		4822 116 52233	10	kΩ	0,5W
3046	⚠	4822 053 21395	3,9	MΩ	0,5W
3048	⚠	4822 053 21395	3,9	MΩ	0,5W
3052		4822 116 52297	68	kΩ	0,5W
3054		4822 116 52297	68	kΩ	0,5W
3056		4822 116 52297	68	kΩ	0,5W
3058		4822 116 52297	68	kΩ	0,5W
3083		4822 116 52215	220	Ω	0,5W
3084		4822 116 52228	680	Ω	0,5W
3085		4822 116 52231	820	Ω	0,5W
3090		4822 100 12163	470	Ω	0,5W
3092		4822 116 52224	470	Ω	0,5W
3095		4822 116 52224	470	Ω	0,5W
3123		4822 117 11169	4,7	Ω	0,5W
3125		4822 116 52175	100	Ω	0,5W

COILS

5042		4822 157 60147	2,2 µH
5050	⚠	4822 157 70682	MAINS FILTER
5070	⚠	4822 146 21781	TRANSFORMER
5123		4822 157 52684	10 µH
5130		4822 157 60147	2,2 µH
5132		4822 157 53006	22 µH
5160	⚠	4822 157 53005	
5162		4822 157 50961	22 µH
5182		4822 157 53252	22 µH
5184		4822 157 53252	22 µH

DIODES

6027	4822 130 30842	BAV21
6040	4822 130 82885	BYT52M
6070	5322 209 12018	DF08M
6100	4822 130 82885	BYT52M
6105	4822 130 82885	BYT52M
6130	4822 130 32961	BYV28-200
6155	4822 130 32961	BYV28-200
6180	4822 130 32715	SB340

TRANSISTORS & IC's

7005	*	4822 209 31528	TDA4605-3
7007		4822 209 31551	SPH4690
7035	*	4822 130 62753	IRFBC30
7080	⚠	4822 130 83676	SOC1012T/K1150PG
7085		4822 209 33323	TL431CLPRM

*** substitute for SPH4690**

⚠......Safety component, use only this type

POWER SUPPLY MSM

CONNECTORS

		4822 265 41251	15 pin
	⚠	4822 267 31064	Mains connector

MISCELLANEOUS

	⚠	4822 256 30274	Fuse holder
	⚠	4822 462 71855	MSM Cover
1101	⚠	4822 070 32002	Fuse 2A/250V

CAPACITORS

2101	⚠	4822 121 70163	100	nF	250V
2103	⚠	4822 122 33284	470	pF	400V
2105	⚠	4822 122 33284	470		400V
2107	⚠	4822 122 33284	470		400V
2108	⚠	4822 121 70163	100	nF	250V
2112		4822 124 42104	68	µF	385V
2113	⚠	4822 122 33284	470	pF	400V
2114		5322 121 10472	47	µF	47UF25V
2115		4822 121 42408	220	nF	63V
2116		4822 121 70162	10	nF	400V
2117		5322 121 42386	100	nF	63V
2118		4822 124 80402	1	nF	
2119		4822 121 51299	1	nF	50V
2121		5322 121 42386	100	nF	63V
2201		4822 124 80267	47	µF	50V
2204		4822 124 40739	680	µF	25V
2206		4822 124 40739	680	µF	25V
2207		4822 124 40739	680	µF	25V
2209		4822 124 80267	47	µF	50V
2210		4822 121 41856	22	nF	250V
2211		4822 121 41856	22	nF	250V
2212		5322 121 42386	100	nF	63V
2214		4822 124 40199	680	µF	16V
2215		4822 124 40199	680	µF	16V
2217		5322 121 42386	100	nF	63V

RESISTORS

3102	⚠	4822 053 21395	3,9	MΩ	0,5W
3103	⚠	4822 053 21395	3,9	MΩ	0,5W
3104		4822 116 52224	470	Ω	0,5W
3106	⚠	4822 053 21225	2,2	MΩ	0,5W
3109		4822 053 30338	3,3	Ω	2,5W
3112		4822 116 52271	33	kΩ	0,5W
3119		4822 116 52271	33	kΩ	0,5W
3120		4822 116 52215	220	Ω	0,5W
3121		4822 050 13302	3,3	kΩ	0,4W
3122		4822 117 10314	680	kΩ	
3123		4822 117 10161	560	kΩ	
3124		4822 116 52269	3,3	kΩ	0,5W
3125		4822 116 52215	220	Ω	1/8W
3126		4822 116 52233	10	kΩ	0,5W
3127		4822 116 52191	33	Ω	0,5W
3129		4822 116 52284	47	kΩ	0,5W
3130		4822 116 52284	47	kΩ	0,5W
3131		4822 050 24708	4,7	Ω	0,6W
3132		4822 116 52175	100	Ω	0,5W
3203		4822 116 52224	470	Ω	0,5W
3204		4822 100 11205			
3205		4822 116 52228	680	Ω	0,5W
3206		4822 050 11002	1	kΩ	0,4W
3207		4822 116 52222	390	Ω	0,5W
3208		4822 116 52215	220	Ω	0,5W
3209		4822 116 83082	4,7	Ω	
3210		4822 116 52238	12	kΩ	0,5W

COILS

5103	⚠	4822 218 21101	
5114	⚠	4822 148 81322	TRANSFORMER
5203		4822 157 53006	
5204	⚠	4822 157 53005	0,33 µH
5207		4822 157 53252	22 µH
5209		4822 157 53252	22 µH
5210		4822 157 53252	22 µH

DIODES

6110	4822 130 80858	1N5062
6111	4822 130 80858	1N5062
6112	4822 130 80858	1N5062
6113	4822 130 80858	1N5062
6114	4822 130 80858	1N5062
6115	4822 130 83307	UG06B
6116	4822 130 30621	1N4148
6201	4822 130 83121	BYD73C
6203	4822 130 81516	MUR410
6204	4822 130 81516	MUR410
6206	4822 130 83121	BYD73C
6210	4822 130 32715	SB340

TRANSISTORS & IC's

7105		4822 209 31551	SPH4690
7110	*	4822 209 31528	TDA4605-3
7135	*	4822 130 62753	BUZ90A

*** substitute for SPH4690 (IC7105)**

7210	⚠	4822 209 32126	SOC 1012T
7253		4822 209 81397	TL431CLPST

⚠......Safety component, use only this type

OPERATING PANELS MDCP3/VPT, NDCP2/UG, NDCB1/UG, NDCB1/PECO

CONNECTORS

	4822 265 30988	15 pin
	4822 265 30991	Display holder
	4822 265 92023	Display holder
		only for Display 14-BT-28GK,15-MT-63GK
	4822 276 11349	Keys

MISCELLANEOUS

1001	5322 242 73697	Crystal 8 MHz
1002	4822 242 72892	Crystal 32,768 kHz

CAPACITORS

2003	4822 122 33847	10	pF	50V	
2004	4822 122 10462	15	pF		
2005	4822 125 50412	7,5	pF		
2010	4822 121 51387	10	nF	16V	
2020	4822 124 80229	22	µF	16V	
2030	4822 121 51387	10	nF	16V	
2031	4822 121 42408	220	nF	63V	
2037	4822 121 51387	10	nF		
2051	5322 121 42386	100	nF	63V	
2052	4822 121 42408	220	nF		
2999	4822 124 80238	470	µF	6,3V	only for ECO

RESISTORS

3001	4822 116 52175	100	Ω	0,5W	
3002	4822 116 52175	100	Ω	0,5W	
3006	4822 116 52175	100	Ω	0,5W	
3007	4822 116 52175	100	Ω	0,5W	
3011	4822 116 52233	10	kΩ	0,5W	
3012	4822 116 52233	10	kΩ	0,5W	
3028	4822 116 52215	220	Ω	1/8W	
3029	4822 116 52233	10	kΩ	0,5W	
3030	4822 116 52257	22	kΩ	0,5W	
3031	4822 116 52283	4,7	kΩ	0,5W	
3032	4822 050 11002	1	kΩ	0,4W	
3033	4822 116 52256	2,2	kΩ	0,5W	
3034	4822 116 52283	4,7	kΩ	0,5W	
3035	4822 116 52233	10	kΩ	0,5W	
3036	4822 116 52233	10	kΩ	0,5W	
3037	4822 116 52257	22	kΩ	0,5W	
3050	4822 116 52256	2,2	kΩ	0,5W	
3053	4822 050 24708	4,7	Ω	0,6W	
3053	4822 116 52182	15	Ω	0,6W	
		only for Display 14-BT-28GK,15-MT-63GK			
3300	4822 116 52233	10	kΩ	0,5W	
3301	4822 116 52233	10	kΩ	0,5W	
3302	4822 116 52233	10	kΩ	0,5W	
3400	4822 116 52263	2,7	kΩ	0,5W	**
3401	4822 116 52263	2,7	kΩ	0,5W	**
3402	4822 116 52263	2,7	kΩ	0,5W	**
3403	4822 116 52263	2,7	kΩ	0,5W	**

** only for MDCP./., NDCP./.

COILS

5000	4822 157 52286	22 µH

DIODES

6010	4822 130 30621	1N4148
6011	4822 130 30621	1N4148
6012	4822 130 30621	1N4148
6031	4822 130 30621	1N4148
6032	4822 130 30621	1N4148
6050	4822 130 34197	BZX79-C12
6050	4822 130 30862	BZX79-C9V1
		only for Display 14-BT-28GK,15-MT-63GK
6099	4822 130 31983	BAT85

TRANSISTORS & IC's

7030	5322 130 60068	BC558C
7031	4822 130 40937	BC548B
7101	4822 209 33355	TMP87CH70AF NDCP2-1U only for NDCP2/UG
7101	4822 209 32296	TMP87CH70AF MDCP3-1U only for MDCP3/VPT, MDCB1/VPT
7101	4822 209 33494	TMP87CH70AF NDCQ1-2P only for NDCB1/PECO
7101	4822 209 33489	TMP87CK70AF NDCB2-1U only for NDCB1/UG
7102	4822 130 91144	16-MT-44GK10R only for NDCP2/UG
7102	4822 130 91213	14-BT-28GK only for MDCP3/VPT, MDCB1/P, NDCB1/PECO
7102	4822 130 91363	15-MT-63GK only for NDCB1/UG
7103	4822 214 33534	IR-receiver TFMO-4036MM
7103	4822 212 30842	IR-receiver TFMS5360 only for NDCB1/PECO

⚠......Safety component, use only this type

OPERATING PANEL NDCP4/UBG

CONNECTORS

	4822 267 41161	4 pin
	4822 267 41163	5 pin
	4822 267 51281	15 pin
	4822 256 92072	IR-holder
	4822 265 30991	Display holder
	4822 276 11349	Keys

MISCELLANEOUS

1001	5322 242 73697	Crystal 8.00 MHz
1002	5322 242 73682	Crystal 32,768 kHZ
1104	4822 267 31773	HSJ1452 Edit
1106	4822 267 31775	JPJ2022 chinch YELLO
1107	4822 267 31774	JPJ2022 chinch WHITE

CAPACITORS

2003	4822 122 31971	10	pF	63V
2004	4822 122 32504	15	pF	63V
2005	4822 125 50412	7,5	pF	
2010	4822 122 32442	10	nF	50V
2011	4822 124 42152	220	µF	16V
2020	4822 124 80729	22	µF	16V
2030	4822 122 32442	10	nF	50V
2031	4822 121 42408	220	nF	63V
2037	4822 122 32442	10	nF	50V
2051	4822 122 31947	100	nF	63V
2052	4822 126 13219	100	nF	25V
2401	4822 122 31727	470	pF	63V
2403	4822 121 42408	220	nF	63V
2999	4822 124 80238	200	µF	5,5V

RESISTORS

3011	4822 051 10103	10	kΩ	0,25W
3012	4822 051 10472	4,7	kΩ	0,25W
3028	4822 051 10221	220	Ω	0,25W
3029	4822 051 10103	10	kΩ	0,25W
3030	4822 051 10223	22	kΩ	0,25W
3031	4822 051 10472	4,7	kΩ	0,25W
3032	4822 051 10102	1	kΩ	0,25W
3033	4822 051 20222	2,2	kΩ	0,1W
3034	4822 051 10472	4,7	kΩ	0,25W
3035	4822 051 10103	10	kΩ	0,25W
3036	4822 051 10103	10	kΩ	0,25W
3037	4822 051 10223	22	kΩ	0,25W
3050	4822 116 52256	2,2	kΩ	0,5W
3053	4822 051 10478	4,7	Ω	0,25W
3300	4822 051 10103	10	kΩ	0,25W
3301	4822 051 10103	10	kΩ	0,25W
3302	4822 051 10103	10	kΩ	0,25W
3401	4822 116 52201	75	Ω	0,5W
3402	4822 051 10105	1	MΩ	0,25W
3502	4822 051 10471	470	Ω	0,25W
3901	4822 051 10008	0	Ω	0,25W
3903	4822 051 10008	0	Ω	0,25W

COILS

5000	4822 157 52286	22 µH
5001	4822 157 52285	6,8 µH

DIODES

6010	4822 130 30621	1N4148
6011	4822 130 30621	1N4148
6012	4822 130 30621	1N4148
6031	4822 130 30621	1N4148
6032	4822 130 30621	1N4148
6050	4822 130 34197	BZX79-B12
6099	4822 130 31983	BAT85
6401	4822 130 30621	1N4148
6501	4822 130 34278	BZX79-B6V8
6502	4822 130 34278	BZX79-B6V8

TRANSISTORS & IC's

7030	4822 130 42513	BC858C
7031	5322 130 41982	BC848B
7101	4822 209 33495	TMP87CN71F NDCP4-1U
7102	4822 130 91144	FIP16BM10R
7103	4822 212 30842	TFMS5360

⚠......Safety component, use only this type

CONNECTORS

4822 267 51163	10 pin	
4822 267 51281	15 pin	
4822 267 51281	15 pin	
4822 267 51164	16 pin	not for ECO
4822 267 51281	15 pin	only for ECO
4822 267 41062	6 pin	
4822 265 30989	3 pin	
4822 267 60333	Scart plug	
4822 265 30987	7 pin	
4822 267 40696	3 pin	

MISCELLANEOUS

1400 ⚠	4822 071 56301	Fuse 630mA	
1401	4822 242 73809	Crystal 10 MHz	
1402 ⚠	4822 071 58009	Fuse 80mA	
1500	4822 214 33719	MDLK6D915A	for PAL BG
1500	4822 214 33773	MDLK6E917A	for PAL BG/SEC DK
1500	4822 214 33718	MDLK6B776A	for PAL I
1501	4822 157 60192	Coil	not for PAL I & ECO
1601	4822 242 81067	Crystal 4.433 619 MC	
1602 ⚠	4822 071 58001	Fuse 800mA	
1603	4822 320 40168	Delay line	
1701	4822 116 90869	Resistor network	only for VST
1720	4822 210 10498	UV917	for VST & PAL BG
1720	4822 210 10498	UV917	for VST & PAL BG/SEC DK
1720	4822 210 10498	UV917	for VST & PAL I-VHF (Irland)
1720	4822 210 10452	UV943	for VST & PAL I
1720	4822 210 10392	UV916E	for PLL & PAL BG
1720	4822 210 10392	UV916E	for PLL & PAL BG/SEC DK
1720	4822 210 10392	UV916E	for PLL & PAL I-VHF (Irland)
1720	4822 210 10393	UV944C	for PLL & PAL I
1721	4822 242 81261	OFWG1966M	for PAL BG
1721	4822 242 72197	OFWK2950M	for PAL BG/SEC DK
1721	4822 242 70936	OFWJ1952M	for PAL I
1722	4822 242 72586	TPS5,5MB	for PAL BG
1722	4822 242 81572	TPS6,0MB	for PAL I
1722	4822 242 72586	TPS5,5MB	for PAL BG/SEC DK
1723	4822 242 72914	SFSH5,5MDB	not for PAL I
1724	4822 242 81299	SFSH6,5MDB	for PAL BG/SEC DK
1724	4822 242 70279	SFE6,0MB	for PAL I

CAPACITORS

2000	5322 122 32659	33	pF	50V	
2001	4822 122 33514	68	pF	50V	
2002	4822 126 10326	180	pF	63V	
2003	4822 122 33575	220	pF	50V	
2004	5322 122 32965	18	pF	50V	
2009	4822 124 40248	10	µF	63V	
2010	5322 122 34123	1	nF	50V	
2011	4822 124 40248	10	µF	63V	
2012	4822 124 80705	1	µF	50V	
2013	4822 122 33172	390	pF	50V	
2014	5322 122 32452	47	pF	63V	
2015	4822 122 33177	10	nF	50V	
2017	5322 122 31946	27	pF	50V	
2018	5322 122 32531	100	pF	50V	
2019	5322 122 33538	150	pF	63V	
2020	5322 122 32531	100	pF	50V	
2021	4822 124 41643	100	µF	16V	
2023	4822 124 22263	100		16V	
2024	4822 124 40433	47	µF	25V	
2025	4822 126 10002	100	nF	25V	
2026	5322 122 32531	100	pF	50V	
2027	4822 122 33515	82	pF	63V	
2028	5322 122 33861	120	pF	50V	
2029	5322 122 32452	47	pF	63V	
2032	4822 124 40242	1	µF	63V	
2033	5322 122 33861	120	pF	50V	
2034	5322 122 32654	22	nF	63V	
2035	4822 124 40242	1	µF	63V	
2038	4822 122 33514	68	pF	50V	
2039	5322 122 33538	150	pF	63V	
2040	4822 124 22826	10	µF	16V	
2041	4822 124 40248	10	µF	63V	
2042	4822 126 10002	100	nF	25V	
2043	5322 122 32654	22	nF	63V	
2045	4822 121 51387	10	nF	16V	
2046	4822 124 40242	1	µF	63V	
2047	4822 124 40242	1	µF	63V	
2048	4822 122 33797	47	nF	50V	
2050	5322 122 31946	27	pF	50V	
2052	4822 124 40248	10	µF	63V	
2055	4822 126 10002	100	nF	25V	
2056	4822 122 33797	47	nF	50V	
2057	4822 122 33797	47	nF	50V	
2058	4822 124 41576	2,2	µF	50V	
2059	4822 124 40242	1	µF	63V	
2061	5322 122 34123	1	nF	50V	
2063	5322 122 34123	1	nF	50V	
2064	4822 122 31947	100	nF	63V	
2065	4822 122 33514	68	pF	50V	
2066	5322 122 31946	27	pF	50V	
2067	5322 122 32659	33	pF	50V	
2068	4822 122 33514	68	pF	50V	
2069	5322 122 31946	27	pF	50V	
2070	4822 122 33515	82	pF	63V	
2071	5322 122 32452	47	pF	63V	
2072	5322 122 34123	1	nF	50V	
2079	4822 122 33177	10	nF	50V	
2080	5322 122 34123	1	nF	50V	
2082	4822 124 41576	2,2	µF	only for PAL BG/SEC DK	
2083	4822 124 41576	2,2	µF	only for PAL BG/SEC DK	
2084	4822 124 41577	4,7	µF	only for PAL BG/SEC DK	
2085	4822 124 41643	100	µF	only for PAL BG/SEC DK	
2086	5322 122 34123	1	nF	only for PAL BG/SEC DK	
2087	5322 122 31863	330	pF	50V	
2088	4822 122 31947	100	nF	63V	
2090	4822 126 10002	100	nF	25V	
2095	5322 122 32452	47	pF	63V	
2096	5322 122 32452	47	pF	63V	
2099	5322 122 34123	1	nF	50V	
2100	4822 122 31825	27	pF	63V	
2101	5322 122 33861	120	pF	50V	
2106	5322 122 32481	15	pF	50V	
2107	4822 122 33177	10	nF	50V	
2211	5322 122 32452	47	pF	63V	only for LP
2300	5322 122 31946	27	pF	50V	only for VPS
2301	4822 122 33342	33	nF	63V	only for VPS
2302	4822 126 10002	100	nF	25V	only for VPS
2303	4822 122 33177	10	nF	50V	only for VPS
2402	4822 124 40433	47	µF	25V	
2403	4822 126 10002	100	nF	25V	
2404	5322 126 10223	4,7	nF	63V	
2405	5322 122 32658	22	pF	50V	
2406	5322 122 32658	22	pF	50V	
2407	4822 126 10002	100	nF	25V	
2408	4822 126 10002	100	nF	25V	
2409	4822 122 33177	10	nF	50V	
2410	4822 124 40433	47	µF	25V	
2411	5322 126 10223	4,7	nF	63V	
2412	4822 124 41643	100	µF	16V	
2413	5322 122 34123	1	nF	50V	
2414	4822 122 31981	33	nF	50V	
2415	4822 122 31947	100	nF	63V	
2416	4822 126 10002	100	nF	25V	
2417	4822 124 40433	47	µF	25V	
2418	4822 122 33177	10	nF	50V	
2419	5322 126 10223	4,7	nF	63V	
2420	4822 124 40433	47	µF	25V	
2423	4822 122 31947	100	nF	63V	
2500	5322 126 10223	4,7	nF	63V	

⚠......Safety component, use only this type

FAMILY BOARD N1 N2

2503	5322 122 32268	470	pF	50V	
2504	5322 122 32268	470	pF	50V	
2506	5322 122 32268	470	pF	50V	
2507	4822 124 40433	47	µF	25V	
2508	4822 122 33177	10	nF	50V	
2600	5322 122 34123	1	nF	50V	
2601	5322 122 31865	1,5	nF	63V	only for LP
2602	4822 126 10002	100	nF	25V	only for LP
2603	5322 122 34123	1	nF	50V	
2604	4822 122 33177	10	nF	50V	
2605	4822 124 40433	47	µF	25V	
2606	4822 126 10002	100	nF	25V	
2607	4822 126 10002	100	nF	25V	
2608	4822 122 33216	270	pF	50V	
2609	4822 124 40433	47	µF	25V	
2611	4822 124 40433	47	µF	25V	
2612	5322 122 32654	22	nF	63V	only for LP
2613	4822 122 33177	10	nF	50V	
2614	4822 124 40242	1	µF	63V	
2615	4822 124 40433	47	µF	25V	
2616	4822 124 40433	47	µF	25V	
2617	4822 124 40433	47	µF	25V	
2618	5322 122 31863	330	pF	50V	
2619	4822 124 40433	47	µF	25V	
2620	4822 121 43526	47	nF	250V	
2621	5322 122 34123	1	nF	50V	
2622	5322 121 42489	33	nF	250V	
2623	4822 122 33177	10	nF	50V	
2630	5322 122 32268	470	pF	50V	
2700	4822 122 32927	220	nF	50V	only for VST
2701	4822 126 10002	100	nF	25V	only for VST
2702	5322 122 32654	22	nF	63V	only for VST
2703	4822 126 10002	100	nF	25V	
2704	4822 122 33177	10	nF	50V	only for VST
2705	4822 122 33177	10	nF	50V	only for VST
2707	4822 126 10002	100	nF		only for PLL
2722	4822 126 10002	100	nF	25V	
2723	4822 124 41596	22	µF	50V	
2724	4822 124 40248	10	µF	63V	
2725	4822 124 41576	2,2	µF	50V	
2726	4822 122 31947	100	nF	63V	
2727	4822 126 10002	100	nF	25V	
2728	4822 126 10002	100	nF	25V	
2729	4822 124 41576	2,2	µF	50V	
2730	4822 124 41407	0,47	µF	63V	only for VST
2732	4822 124 41643	100	µF	16V	
2733	4822 126 10002	100	nF	25V	only for VST
2750	4822 124 40246	4,7	µF	63V	
2760	4822 122 32927	220	nF	50V	

RESISTORS

3001	4822 051 20471	470	Ω	0,1W	
3008	4822 051 20223	22	kΩ	0,1W	
3010	4822 100 11842	4,7	kΩ		
3017	4822 051 20103	10	kΩ	0,1W	
3018	4822 100 11842	4,7	kΩ		
3019	4822 051 20682	6,8	kΩ	0,1W	
3020	4822 100 11842	4,7	kΩ		
3021	4822 051 20272	2,7	kΩ	0,1W	
3022	4822 051 20821	820	Ω	0,1W	
3023	4822 051 10102	1	kΩ	0,25W	
3025	4822 051 20104	100	kΩ	0,1W	
3026	4822 051 20472	4,7	kΩ	0,1W	
3027	4822 051 20681	680	Ω	0,1W	
3028	4822 051 20472	4,7	kΩ	0,1W	
3029	4822 051 20472	4,7	kΩ	0,1W	
3030	4822 051 20222	2,2	kΩ	0,1W	
3031	4822 051 20333	33	kΩ	0,1W	
3033	4822 051 10102	1	kΩ	0,25W	
3034	4822 051 20222	2,2	kΩ	0,1W	
3036	4822 051 20392	3,9	kΩ	0,1W	
3037	4822 051 20122	1,2	kΩ	0,1W	
3038	4822 051 20392	3,9	kΩ	0,1W	
3039	4822 100 11843	10	kΩ		
3040	4822 051 20222	2,2	kΩ	0,1W	
3041	4822 051 20472	4,7	kΩ	0,1W	
3043	4822 051 20561	560	Ω	0,1W	
3044	4822 051 10102	1	kΩ	0,25W	
3045	4822 051 20472	4,7	kΩ	0,1W	
3046	4822 051 20222	2,2	kΩ	0,1W	
3051	4822 051 20105	1	MΩ	0,1W	
3052	4822 051 20822	8,2	kΩ	0,1W	
3054	4822 116 52289	5,6	kΩ	0,5W	
3055	4822 051 20821	820	Ω	0,1W	
3062	4822 051 20182	1,8	kΩ	0,1W	
3063	4822 051 20271	270	Ω	0,1W	
3064	4822 051 20561	560	Ω	0,1W	
3065	4822 051 10102	1	kΩ	0,25W	
3066	4822 051 20122	1,2	kΩ	0,1W	
3067	4822 051 20391	390	Ω	0,1W	
3068	4822 051 10102	1	kΩ	0,25W	
3069	4822 051 20561	560	Ω	0,1W	
3070	4822 051 20391	390	Ω	0,1W	
3071	4822 051 20681	680	Ω	0,1W	
3072	4822 051 20271	270	Ω	0,1W	
3073	4822 051 10102	1	kΩ	0,25W	
3075	4822 051 20471	470	Ω	0,1W	
3076	4822 116 52219	330	Ω	0,5W	
3077	4822 051 20183	18	kΩ	0,1W	
3078	4822 051 20183	18	kΩ	0,1W	
3085	4822 051 20223	22	kΩ	only for PAL BG/SEC DK	
3086	4822 051 20821	820	Ω	only for PAL BG/SEC DK	
3087	4822 051 20105	1	MΩ	only for PAL BG/SEC DK	
3088	4822 051 20223	22	kΩ	only for PAL BG/SEC DK	
3089	4822 050 11002	1	kΩ	0,4W	
3090	4822 051 10102	1	kΩ	0,25W	
3091	4822 051 20562	5,6	kΩ	0,1W	
3092	4822 051 20332	3,3	kΩ	0,1W	
3093	4822 051 20152	1,5	kΩ	0,1W	
3094	4822 051 20222	2,2	kΩ	0,1W	
3096	4822 100 11843	10	kΩ	0,1W	
3097	4822 051 20332	3,3	kΩ	0,1W	
3099	4822 100 11877	2,2	kΩ	0,1W	
3100	4822 050 11002	1	kΩ	0,4W	
3104	4822 051 20472	4,7	kΩ	0,1W	
3105	4822 051 20122	1,2	kΩ	0,1W	
3106	4822 051 20271	270	Ω	0,1W	
3109	4822 051 20561	560	Ω	0,1W	
3111	4822 051 20471	470	Ω	0,1W	
3112	4822 051 20222	2,2	kΩ	0,1W	
3114	4822 051 20103	10	kΩ	0,1W	
3116	4822 051 20123	12	kΩ	0,1W	
3117	4822 051 20183	18	kΩ	0,1W	
3119	4822 051 20101	100	Ω	0,1W	
3121	4822 051 10102	1	kΩ	only for PAL BG/SEC DK	
3128	4822 051 20223	22	kΩ	0,1W	
3132	4822 051 20681	680	Ω	0,1W	
3135	4822 051 20104	100	kΩ	0,1W	
3137	4822 051 10102	1	kΩ	0,25W	
3300	4822 051 20332	3,3	kΩ	0,1W	only for VPS
3301	4822 051 20682	6,8	kΩ	0,1W	only for VPS
3302	4822 051 20105	1	MΩ	0,1W	only for VPS
3303	4822 051 20104	100	kΩ	0,1W	only for VPS
3304	4822 051 20105	1	MΩ	0,1W	only for VPS
3305	4822 051 20101	100	Ω	0,1W	only for VPS
3306	4822 051 20105	1	MΩ	0,1W	only for VPS
3307	4822 051 20562	5,6	kΩ	0,1W	only for VPS
3308	4822 051 20101	100	Ω	0,1W	only for VPS
3309	4822 051 20101	100	Ω	0,1W	only for VPS
3400	4822 050 11002	1	kΩ	0,4W	
3402	4822 051 20472	4,7	kΩ	0,1W	
3403	4822 051 10102	1	kΩ	0,25W	
3404	4822 051 20472	4,7	kΩ	0,1W	
3406	4822 051 20158	1,5	Ω	0,1W	
3407	4822 051 20158	1,5	Ω	0,1W	
3408	4822 051 20103	10	kΩ	0,1W	not for ECO
3410	4822 116 52199	68	Ω	0,5W	
3411	4822 116 52199	68	Ω	0,5W	
3412	4822 051 20472	4,7	kΩ	0,1W	
3413	4822 051 10102	1	kΩ	0,25W	
3415	4822 050 11002	1	kΩ	0,4W	
3416	4822 116 52234	100	kΩ	0,5W	

⚠......Safety component, use only this type

3417	4822 116 52283	4,7	kΩ	0,5W	
3418	4822 051 10333	33	kΩ	0,25W	
3419	4822 051 20472	4,7	kΩ	0,1W	
3420	4822 051 20471	470	Ω	0,1W	only for LP
3421	4822 051 10101	100	Ω	0,25W	not for LP
3422	4822 051 10102	1	kΩ	0,25W	
3423	4822 051 20182	1,8	kΩ	0,1W	
3424	4822 051 20682	6,8	kΩ	0,1W	
3425	4822 051 20822	8,2	kΩ	0,1W	
3426	4822 051 20562	5,6	kΩ	0,1W	
3427	4822 051 10102	1	kΩ	0,25W	
3428	4822 116 52283	4,7	kΩ	0,5W	
3429	4822 051 20472	4,7	kΩ	0,1W	
3430	4822 051 20471	470	Ω	0,1W	
3431	4822 051 10102	1	kΩ	0,25W	
3432	4822 050 11002	1	kΩ	0,4W	
3433	4822 051 20103	10	kΩ	0,1W	
3434	4822 116 52257	22	kΩ	0,5W	
3435	4822 051 20823	82	kΩ	0,1W	
3436	4822 051 20223	22	kΩ	0,1W	
3437	4822 051 20103	10	kΩ	0,1W	
3438	4822 051 20392	3,9	kΩ	0,1W	
3439	4822 051 10223	22	kΩ	0,25W	
3440	4822 051 20158	1,5	Ω	0,1W	
3441	4822 116 52233	10	kΩ	0,5W	
3442	4822 050 11002	1	kΩ	0,4W	
3443	4822 051 10102	1	kΩ	0,25W	
3444	4822 051 20103	10	kΩ	0,1W	
3445	4822 051 20223	22	kΩ	0,1W	
3446	4822 051 10102	1	kΩ	0,25W	
3447	4822 116 52233	10	kΩ	0,5W	
3448	4822 051 20223	22	kΩ	0,1W	
3449	4822 051 20104	100	kΩ	0,1W	
3450	4822 051 20225	2,2	MΩ	0,1W	
3451	4822 116 52233	10	kΩ	0,5W	
3452	4822 051 20393	39	kΩ	0,1W	
3453	4822 051 20472	4,7	kΩ	0,1W	
3454	4822 051 20471	470	Ω	0,1W	
3455	4822 051 20221	220	Ω	0,1W	
3456	4822 116 52283	4,7	kΩ	0,5W	not for ECO
3457	4822 051 20472	4,7	kΩ	0,1W	
3458	4822 051 20472	4,7	kΩ	0,1W	
3459	4822 116 52233	10	kΩ	0,5W	not for ECO
3460	4822 116 52233	10	kΩ	0,5W	
3461	4822 051 20101	100	Ω	0,1W	
3462	4822 051 20101	100	Ω	0,1W	
3463	4822 051 20103	10	kΩ	0,1W	
3464	4822 051 20833	82	kΩ	0,1W	only for PAL I
3465	4822 051 20472	4,7	kΩ	0,1W	not for ECO
3466	4822 051 20222	2,2	kΩ	0,1W	not for ECO
3467	4822 051 20472	4,7	kΩ	0,1W	
3468	4822 116 52224	470	Ω	0,5W	
3469	4822 051 10102	1	kΩ	0,25W	
3470	4822 116 52224	470	Ω	0,5W	
3471	4822 051 20472	4,7	kΩ	0,1W	only for LP
3472	4822 051 10102	1	kΩ	0,1W	not for 4 head
3473	4822 116 52256	2,2	kΩ	1/6W	only for ECO
3485	4822 051 20222	2,2	kΩ	0,1W	
3486	4822 051 20182	1,8	kΩ	0,1W	
3488	4822 116 52256	2,2	kΩ	0,5W	
3489	4822 051 20103	10	kΩ	0,1W	
3498	4822 051 20101	100	Ω	0,1W	only for 4 head
3499	4822 051 20472	4,7	kΩ	0,1W	not for 4 head
3500	4822 116 52226	560	Ω	0,5W	
3501	4822 051 10102	1	kΩ	0,25W	
3502	4822 051 10102	1	kΩ	0,25W	
3504	4822 051 20471	470	Ω	0,1W	
3505	4822 051 20153	15	kΩ	0,1W	
3506	4822 116 52296	6,8	kΩ	0,5W	
3507	4822 116 52296	6,8	kΩ	0,5W	
3508	4822 051 20331	330	Ω	0,1W	
3509	4822 051 20103	10	kΩ	0,1W	
3510	4822 051 20103	10	kΩ	0,1W	
3511	4822 116 52202	82	Ω	0,5W	
3512	4822 051 20331	330	Ω	0,1W	
3513	4822 051 20103	10	kΩ	0,1W	
3514	4822 051 20104	100	kΩ	0,1W	
3515	4822 051 20759	75	Ω	0,1W	
3516	4822 116 52289	5,6	kΩ	0,5W	
3517	4822 116 52233	10	kΩ	0,5W	
3520	4822 051 20333	33	kΩ	0,1W	
3521	4822 116 52175	100	Ω	0,5W	
3600	4822 051 20479	47	Ω	0,1W	
3601	4822 051 20563	56	kΩ	0,1W	
3602	4822 051 20331	330	Ω	0,1W	only for LP
3603	4822 051 20123	12	kΩ	0,1W	
3604	4822 051 20394	390	kΩ	0,1W	
3605	4822 051 20101	100	Ω	0,1W	
3606	4822 100 11843	10	kΩ		
3607	4822 051 20105	1	MΩ	0,1W	
3608	4822 051 20473	47	kΩ	0,1W	
3609	4822 051 20104	100	kΩ	0,1W	
3610	4822 051 20123	12	kΩ	0,1W	
3611	4822 051 10333	33	kΩ	0,25W	
3612	4822 051 20183	18	kΩ	0,1W	
3613	4822 051 20912	9,1	kΩ	0,1W	
3614	4822 051 20153	15	kΩ	0,1W	
3615	4822 051 20471	470	Ω	0,1W	only for LP
3616	4822 051 10102	1	kΩ	0,25W	
3617	4822 051 20223	22	kΩ	0,1W	
3618	4822 101 11222	100	kΩ	0,1W	
3619	4822 051 20158	1,5	Ω	0,1W	
3620	4822 051 20473	47	kΩ	0,1W	
3621	4822 051 20103	10	kΩ	0,1W	
3623	4822 051 20103	10	kΩ	0,1W	
3624	4822 051 20332	3,3	kΩ	0,1W	
3625	4822 051 10339	33	Ω	0,25W	
3626	4822 051 10479	47	Ω	0,25W	
3627	4822 051 20332	3,3	kΩ	0,1W	
3628	4822 051 20103	10	kΩ	0,1W	
3700	4822 050 11003	10	kΩ	0,4W	only for VST
3701	4822 050 11303	13	kΩ	0,4W	only for VST
3702	4822 051 10101	100	Ω	1/8W	only for PLL
3703	4822 051 10101	100	Ω	1/8W	only for PLL
3705	4822 051 20223	22	kΩ	0,1W	only for VST
3706	4822 051 20683	68	kΩ	0,1W	only for VST
3707	4822 050 12202	2,2	kΩ	0,4W	only for VST
3708	4822 050 15604	560	kΩ	0,4W	only for VST
3720	4822 050 11002	1	kΩ	0,4W	
3721	4822 051 20682	6,8	kΩ	0,1W	
3722	4822 051 20223	22	kΩ	0,1W	
3724	4822 101 11218	22	kΩ		
3725	4822 116 52226	560	Ω	0,5W	
3728	4822 051 20183	18	kΩ	0,1W	
3729	4822 051 20183	18	kΩ	0,1W	
3730	4822 116 52219	330	Ω	0,5W	
3731	4822 051 20561	560	Ω	0,1W	not for PAL I
3732	4822 051 20222	2,2	kΩ	0,1W	
3733	4822 051 20222	2,2	kΩ	0,1W	
3735	4822 051 20473	47	kΩ	0,1W	not f. PAL I & PLL
3736	4822 051 20473	47	kΩ	0,1W	not f. PAL I & PLL
3739	4822 051 20223	22	kΩ	0,1W	
3740	4822 051 20471	470	Ω		for PAL BG/SEC DK & PAL I
3741	4822 051 20392	3,9	kΩ	0,1W	only for VST
3742	4822 051 20183	18	kΩ	0,1W	only for VST
3743	4822 051 20472	4,7	kΩ	0,1W	only for VST
3744	4822 051 10102	1	kΩ	0,25W	only for VST
3745	4822 051 20472	4,7	kΩ	0,1W	only for VST
3745	4822 051 20561	560	Ω	0,1W	only for PLL
3746	4822 051 20122	1,2	kΩ	0,1W	only for VST
3747	4822 051 20122	1,2	kΩ	0,1W	only for VST
3750	4822 050 11803	18	kΩ	0,4W	
3751	4822 050 14702	4,7	kΩ	0,4W	
3752	4822 051 20471	470	Ω	0,1W	
3753	4822 051 10102	1	kΩ	0,25W	only for PLL
3754	4822 051 20331	330	Ω	0,1W	
3755	4822 051 10109	10	Ω	0,25W	
3756	4822 051 20223	22	kΩ	0,1W	
3757	4822 051 20471	470	Ω	0,1W	
3760	4822 051 20823	82	kΩ	0,1W	only for VST
3761	4822 116 52234	100	kΩ	0,5W	not for ECO
3901	4822 051 10008	0	Ω	0,25W	
3902	4822 051 10008	0	Ω		only f. PAL I & ECO
3903	4822 051 10008	0	Ω	0,25W	

⚠......Safety component, use only this type

3904	4822 051 10008	0	Ω	0,25W	
3905	4822 051 10008	0	Ω	0,25W	not for 4 head
3906	4822 051 10008	0	Ω	0,25W	
3907	4822 051 10008	0	Ω	0,25W	
3950	4822 051 10008	0	Ω	0,25W	
3953	4822 051 10008	0	Ω	0,25W	only for PLL
3954	4822 051 20008	0	Ω	0,1W	
3985	4822 051 10008	0	Ω	0,25W	

COILS

5002	4822 157 53253	27	µH
5003	4822 157 53265	100	µH
5004	4822 157 52842	15	µH
5005	4822 157 53253	27	µH
5006	4822 157 53251	8,2	µH
5008	4822 157 53251	8,2	µH
5009	4822 157 52842	15	µH
5010	4822 157 53253	27	µH
5011	4822 157 52842	15	µH
5012	4822 157 53265	100	µH
5013	4822 157 52842	15	µH
5014	4822 157 53251	8,2	µH
5015	4822 157 63676	56	µH
5016	4822 157 53253	27	µH
5017	4822 157 63676	56	µH
5021	4822 157 50961	22	µH
5022	4822 157 52285	6,8	µH
5023	4822 157 63675		
5024	4822 157 63678	560	µH
5025	4822 157 53253	27	µH
5401	4822 157 52286	22	µH
5402 ⚠	4822 157 53005	33	nH
5501	4822 157 52285	6,8	µH
5601	4822 157 70038	10	mH
5602	4822 158 10525	330	µH
5603	4822 157 53531		
5604	4822 157 62681		
5701	4822 157 63717	6,8 µH	
5703	4822 157 70017		
5720	4822 157 62681	1,2 µH	
5721	4822 157 52285	6,8 µH	
5722	4822 157 52842	15 µH	

DIODES

6001	4822 130 30621	1N4148	
6002	4822 130 30621	1N4148	
6004	4822 130 31983	BAT85	
6401	4822 130 30621	1N4148	
6402	4822 130 30621	1N4148	not for ECO
6501	4822 130 34197	BZX79-B12	
6502	4822 130 34197	BZX79-B12	
6504	4822 130 31024	BZX79-B18	
6506	4822 130 34197	BZX79-B12	
6507	4822 130 34197	BZX79-B12	
6508	4822 130 34278	BZX79-B6V8	
6509	4822 130 30621	1N4148	
6510	4822 130 30621	1N4148	
6702	4822 130 30621	1N4148	

TRANSISTORS & IC's

7000	5322 130 41983	BC858B	
7001	5322 130 41982	BC848B	only for PAL BG/SEC DK
7006	5322 130 41983	BC858B	
7007	5322 130 41982	BC848B	
7016	5322 130 41982	BC848B	
7017	4822 130 42353	BSF19-F2	
7018	4822 130 60383	BF824	
7019	4822 130 42353	BSF19-F2	
7020	4822 130 60145	DTC124E/25	only for LP
7025	5322 130 41982	BC848B	
7026	5322 130 41982	BC848B	
7029	4822 130 42353	BSF19-F2	
7030	5322 130 41982	BC848B	
7031	5322 130 41982	BC848B	
7032	5322 130 41982	BC848B	
7036	5322 130 41982	BC848B	
7037	4822 130 61495	DTA124EK	not for 4 head
7038	4822 130 61495	DTA124EK	not for 4 head
7051	4822 209 32155	LA7191	
7053	4822 209 60177	LM339D	
7301	4822 209 32728	SDA5642	only for VPS
7402	4822 209 30146	L2722	
7403	5322 130 41982	BC848B	
7404	5322 130 41982	BC848B	
7405	4822 130 60145	DTC124E/25	
7406	4822 130 60145	DTC124E/25	not for ECO
7407	5322 130 41982	BC848B	
7408	4822 130 60089	BD436	
7410	4822 209 32736	TMP91C642N-MMTD4-4U	
7410	4822 209 33493	TMP91C642N-NTDQ1-1U	only ECO
7411	4822 209 30836	SAA1310/N2	
7412	4822 209 62098	ST24C02CP	only for VST
7412	4822 209 62098	ST24C02CP	only for ECO
7412	4822 209 32709	ST24C04CB1	only for PLL
7413	4822 130 61495	DTA124EK	
7500	5322 130 41983	BC858B	
7501	5322 130 41983	BC858B	
7502	5322 130 41982	BC848B	
7504	4822 209 30692	MSM7403RS	
7505	5322 130 41983	BC858B	only for PAL BG/SEC DK
7506	5322 130 41983	BC858B	
7551	5322 209 10576	HEF4053BD	
7601	4822 209 31548	LA7282	
7602	5322 130 41982	BC848B	
7603	4822 130 41344	BC337-40	
7604	4822 130 41715	BC328-40	
7605	4822 130 60145	DTC124E/25	
7606	5322 130 41982	BC848B	
7607	4822 130 41715	BC328-40	
7700	4822 209 60175	LM358D	only for VST
7701	5322 209 10421	HEF4094BD	only for VST
7702	4822 209 31532	TDA9800/V3	
7703	4822 209 81397	TL431CLPST	
7704	4822 209 10273	HEF4104BD	only for VST
7705	5322 130 41983	BC858B	
7706	4822 130 60089	BD436	
7707	5322 130 41982	BC848B	
7708	5322 130 41982	BC848B	not for PAL I & PLL
7709	5322 130 41982	BC848B	not for PAL I & PLL
7710	4822 130 61495	DTA124EK	not for PAL I & PLL
7711	5322 130 41983	BC858B	not for PAL I & PLL
7713	5322 130 60508	BC857B	only for VST
7714	4822 130 60511	BC847B	only for VST

⚠......Safety component, use only this type

CONNECTORS

4822 267 51163	10 pin
4822 267 51281	15 pin
4822 267 51164	16 pin
4822 267 51281	15 pin
4822 267 41062	6 pin
4822 265 30989	3 pin
4822 265 30987	7 pin
4822 267 40696	3 pin
4822 267 31513	SCART

MISCELLANEOUS

1400	⚠	4822 071 56301	Fuse 630mA	
1401		4822 242 73809	Crystal 10 MHz	
1402	⚠	4822 071 58009	Fuse 80mA	
1500		4822 214 33713	MDLK6D906A	only for PAL BG
1500		4822 214 33718	MDLK6B776A	only for PAL I
1500		4822 214 33417	Boster only for SECAM L & Multistd.	
1501		4822 157 60192	Group Delay	not for PAL I
1601		4822 242 81067	Crystal 4.433 619 MHZ	
1602	⚠	4822 071 58001	Fuse 800mA	
1603		4822 320 40168	Delay line	not for SECAM L
1701		4822 210 10392	UV916E	
1701		4822 210 10393	UV944C	only for PAL I
1720		4822 242 81261	OFWG1966M	only for PAL BG
1720		4822 242 81436	OFWK3953M	only for SECAM L
1720		4822 242 70936	OFWJ1952	only for PAL I
1721		4822 242 81259	OFWK6256	only for Multistandard
1740		4822 242 72586	TPS5,5MB-TF20	only for PAL BG
1745		4822 242 72914	SFSH5,5MDB	only for PAL BG
1745		4822 242 72577	SFE6,0MB	only for PAL I
1821		4822 242 81423	OFWL9453M	only for Multistandard

CAPACITORS

2000	5322 122 32659	33	pF	50V	
2001	4822 122 33514	68	pF	50V	
2002	4822 126 10326	180	pF	63V	
2003	4822 122 33575	220	pF	50V	
2004	5322 122 32965	18	pF	50V	
2009	4822 124 80454	10	µF	16V	
2010	5322 122 34123	1	nF	50V	
2011	4822 124 40248	10	µF	63V	
2012	4822 124 80705	1	µF	50V	
2013	4822 122 31771	390	pF	63V	
2014	5322 122 32452	47	pF	63V	
2015	4822 122 33177	10	nF	50V	
2018	5322 122 32531	100	pF	50V	
2019	5322 122 33538	150	pF	63V	
2020	5322 122 32531	100	pF	50V	
2021	4822 124 41584	100	µF	10V	
2022	5322 122 31946	27	pF	50V	
2023	4822 124 40196	220	µF	16V	
2024	4822 124 40433	47	µF	25V	
2025	5322 122 32654	22	nF	63V	
2026	5322 122 32531	100	pF	50V	
2027	4822 122 33515	82	pF	63V	not for SECAM L
2028	5322 122 33861	120	pF	50V	
2029	5322 122 32452	47	pF	63V	
2030	4822 122 31947	100	nF	63V	
2032	4822 124 23053	1	µF	50V	
2033	5322 122 33861	120	pF	50V	not for SECAM L
2034	5322 122 32654	22	nF	63V	
2035	4822 124 40242	1	µF	63V	
2038	4822 122 33514	68	pF	50V	
2039	5322 122 33538	150	pF	63V	
2040	4822 124 22826	10	µF	16V	
2041	4822 124 22826	10	µF	16V	
2042	4822 126 10002	100	nF	25V	
2043	4822 122 31797	22	nF	63V	
2045	4822 122 33177	10	nF	50V	not for SECAM L
2046	4822 124 23053	1	µF	50V	
2047	4822 124 23053	1	µF	50V	
2048	4822 122 32542	47	nF	63V	
2050	5322 122 31946	27	pF	50V	
2052	4822 124 40248	10	µF	63V	
2055	4822 122 31947	100	nF	63V	
2056	4822 122 33797	47	nF	50V	not for SECAM L
2057	4822 122 33797	47	nF	50V	
2058	4822 124 80227	2,2	µF	35V	
2059	4822 124 40242	1	µF	63V	
2060	4822 122 32442	10	nF		only for TXT
2061	5322 122 34123	1	nF	50V	not for SECAM L
2063	5322 122 34123	1	nF	50V	not for SECAM L
2064	4822 122 31947	100	nF	63V	
2065	4822 122 33514	68	pF	50V	
2066	5322 122 31946	27	pF	50V	
2067	5322 122 32659	33	pF	50V	
2068	4822 122 33514	68	pF	50V	
2069	5322 122 31946	27	pF	50V	
2070	4822 122 33515	82	pF	63V	
2070	4822 122 33514	68	pF		only for LP
2070	4822 126 10004	120	pF		only for SECAM L
2071	5322 122 32452	47	pF	63V	
2072	5322 122 34123	1	nF	50V	
2079	4822 122 33177	10	nF	50V	not for SECAM L
2080	5322 122 34123	1	nF	50V	not for SECAM L
2087	5322 116 80853	560	pF	63V	
2087	4822 122 33575	270	pF		only for SECAM L
2088	4822 122 31947	100	nF	63V	
2090	4822 122 31947	100	nF	63V	
2095	4822 122 31772	47	pF	63V	
2096	5322 122 32452	47	pF	63V	
2099	5322 122 31946	27	pF	50V	not for SECAM L
2101	5322 122 33861	120	pF	50V	not for SECAM L
2106	5322 122 32481	15	pF	50V	not for SECAM L
2107	4822 122 33177	10	nF	50V	not for 4 head
2211	5322 122 32452	47	pF		only for 4 head
2402	4822 124 40433	47	µF	25V	
2403	5322 122 32654	22	nF	63V	
2404	5322 126 10223	4,7	nF	63V	
2405	5322 122 32658	22	pF	50V	
2406	5322 122 32658	22	pF	50V	
2407	4822 122 31947	100	nF	63V	
2408	4822 122 31947	100	nF	63V	
2409	4822 122 33177	10	nF	50V	
2410	4822 124 40433	47	µF	25V	
2411	5322 126 10223	4,7	nF	63V	
2412	4822 124 40433	47	µF	25V	
2413	5322 122 34123	1	nF	50V	
2414	4822 122 33811	33	nF	50V	
2415	4822 126 10002	100	nF	25V	
2416	4822 126 10002	100	nF	25V	
2417	4822 124 40433	47	µF	25V	
2418	4822 122 33177	10	nF	50V	
2419	5322 126 10223	4,7	nF	63V	
2420	4822 124 40433	47	µF	25V	
2423	4822 122 31947	100	nF	63V	
2424	5322 122 32654	22	nF	63V	
2506	4822 126 10002	100	nF	25V	
2507	4822 124 22826	10	µF	16V	
2530	5322 122 32268	470	pF	50V	
2531	5322 122 32268	470	pF	50V	
2540	5322 122 32268	470	pF	50V	
2592	4822 122 33177	10	nF	50V	
2600	5322 122 34123	1	nF	50V	
2601	5322 122 31865	1,5	nF		only for 4 head
2602	4822 122 31947	100	nF		only for 4 head
2604	4822 122 33177	10	nF	50V	
2605	4822 124 40433	47	µF	25V	
2606	4822 122 31947	100	nF	63V	
2607	4822 122 31947	100	nF	63V	
2608	5322 122 32268	470	pF	50V	
2609	4822 124 40433	47	µF	25V	
2610	4822 122 33175	2,2	nF	50V	
2611	4822 124 40433	47	µF	25V	
2612	5322 122 32654	22	nF		only for 4 head
2613	4822 122 32442	10	nF	50V	
2614	4822 124 40242	1	µF	63V	
2615	4822 124 40433	47	µF	25V	

⚠......Safety component, use only this type

2616	4822 124 40433	47	µF	25V	
2617	4822 124 40433	47	µF	25V	
2618	5322 122 31863	330	pF	50V	
2619	4822 124 40433	47	µF	25V	
2620	4822 121 43526	47	nF	250V	
2621	5322 122 34123	1	nF	50V	
2622	5322 121 42489	33	nF	250V	
2623	4822 122 32442	10	nF	50V	
2624	4822 124 40242	1	µF	63V	
2701	4822 122 31947	100	nF	63V	
2702	4822 122 33177	10	nF	50V	
2703	5322 124 41431	22	µF	35V	
2704	4822 124 40242	1	µF	63V	
2720	5322 122 32531	100	pF	50V	
2725	4822 122 31947	100	nF	63V	
2726	5322 122 32654	22	nF	63V	not for SECAM L
2727	4822 124 80227	2,2	µF	35V	not for SECAM L
2728	4822 124 40248	10	µF	63V	not for SECAM L
2737	4822 122 31947	100	nF	63V	
2738	5322 124 41431	22	µF	35V	
2739	4822 122 31947	100	nF	63V	
2740	4822 124 41576	2,2	µF	50V	
2741	4822 122 31947	100	nF	63V	
2790	4822 124 80228	4,7	µF	25V	
2791	4822 124 80231	47	µF	16V	
2833	4822 122 31765	100	pF		only for SECAM L & Multist.
2843	4822 124 22826	10	µF	16V	

RESISTORS

3001	4822 116 52224	470	Ω	0,5W	
3007	4822 051 20101	100	Ω	0,1W	
3002	4822 051 20222	2,2	kΩ	0,1W	only for TXT
3003	4822 051 20472	4,7	kΩ		only for TXT
3004	4822 051 20104	100	kΩ	0,25W	only for TXT
3005	4822 117 10834	47	kΩ		only for TXT
3006	4822 051 20472	4,7	kΩ		only for TXT
3008	4822 051 20223	22	kΩ	0,1W	
3009	4822 051 20222	2,2	kΩ	0,1W	not for SECAM L
3010	4822 100 12156	4,7	kΩ		
3011	4822 117 10833	10	kΩ	0,1W	
3014	4822 051 10104	100	kΩ	0,25W	
3017	4822 117 10833	10	kΩ	0,1W	
3018	4822 100 12156	4,7	kΩ		
3019	4822 051 10682	6,8	kΩ	0,25W	
3020	4822 100 12156	4,7	kΩ		
3021	4822 051 20272	2,7	kΩ	0,1W	
3022	4822 051 20821	820	Ω	0,1W	
3023	4822 051 10102	1	kΩ	0,25W	
3025	4822 051 20104	100	kΩ	0,1W	
3026	4822 051 20472	4,7	kΩ	0,1W	
3027	4822 051 20681	680	Ω	0,1W	
3028	4822 051 20472	4,7	kΩ	0,1W	
3029	4822 051 20472	4,7	kΩ	0,1W	
3030	4822 051 20222	2,2	kΩ	0,1W	
3031	4822 051 20333	33	kΩ	0,1W	
3033	4822 051 10102	1	kΩ	0,25W	
3034	4822 051 20222	2,2	kΩ	0,1W	
3036	4822 051 20392	3,9	kΩ	0,1W	
3037	4822 051 20122	1,2	kΩ	0,1W	
3038	4822 051 20392	3,9	kΩ	0,1W	
3039	4822 100 12157	10	kΩ		
3040	4822 051 20222	2,2	kΩ	0,1W	
3041	4822 051 20472	4,7	kΩ	0,1W	
3043	4822 051 20561	560	Ω	0,1W	
3044	4822 051 10102	1	kΩ	0,25W	
3045	4822 051 20472	4,7	kΩ	0,1W	
3046	4822 051 20222	2,2	kΩ	0,1W	
3051	4822 051 20105	1	MΩ	0,1W	
3052	4822 051 20822	8,2	kΩ	0,1W	
3054	4822 051 20562	5,6	kΩ	0,1W	
3055	4822 051 20821	820	Ω	0,1W	
3061	4822 051 20008	0	Ω	0,1W	not for SECAM L
3062	4822 051 20182	1,8	kΩ	0,1W	not for SECAM L
3063	4822 051 20271	270	Ω	0,1W	not for SECAM L
3064	4822 051 20561	560	Ω	0,1W	not for SECAM L
3065	4822 051 10102	1	kΩ	0,25W	
3066	4822 051 20122	1,2	kΩ	0,1W	
3067	4822 051 20391	390	Ω	0,1W	
3068	4822 051 10102	1	kΩ	0,25W	
3069	4822 051 20561	560	Ω	0,1W	
3070	4822 051 20391	390	Ω	0,1W	
3071	4822 051 20681	680	Ω	0,1W	
3072	4822 051 20271	270	Ω	0,1W	
3073	4822 051 10102	1	kΩ	0,25W	
3075	4822 051 20471	470	Ω	0,1W	
3076	4822 051 20331	330	Ω	0,1W	
3077	4822 051 20183	18	kΩ	0,1W	
3078	4822 051 20183	18	kΩ	0,1W	
3089	4822 051 10102	1	kΩ	0,25W	not for SECAM L
3090	4822 051 10102	1	kΩ	0,25W	not for SECAM L
3091	4822 051 20562	5,6	kΩ	0,1W	not for SECAM L
3092	4822 051 20332	3,3	kΩ	0,1W	not for SECAM L
3093	4822 051 20152	1,5	kΩ	0,1W	not for SECAM L
3094	4822 051 20222	2,2	kΩ	0,1W	not for SECAM L
3095	4822 116 52283	4,7	kΩ	0,5W	only for SECAM
3096	4822 100 12157	10	kΩ		not for SECAM L
3097	4822 051 20332	3,3	kΩ	0,1W	
3099	4822 100 12155	2,2	kΩ		
3100	4822 051 10102	1	kΩ	0,25W	
3104	4822 051 20472	4,7	kΩ	0,1W	
3105	4822 051 20122	1,2	kΩ	0,1W	
3106	4822 051 20271	270	Ω	0,1W	
3109	4822 051 20561	560	Ω	0,1W	
3111	4822 051 20471	470	Ω	0,1W	
3112	4822 051 20222	2,2	kΩ	0,1W	
3116	4822 116 52233	10	kΩ	0,5W	
3117	4822 051 20183	18	kΩ	0,1W	
3119	4822 116 52175	100	Ω	0,5W	
3128	4822 051 20223	22	kΩ	0,1W	not for SECAM L
3132	4822 051 20681	680	Ω	0,1W	not for SECAM L
3135	4822 051 20104	100	kΩ	0,1W	
3137	4822 051 10102	1	kΩ	0,25W	
3218	4822 051 20103	10	kΩ	0,1W	only for 4 head
3407	4822 051 20222	2,2	kΩ	0,1W	
3410	4822 116 52199	68	Ω	0,5W	
3411	4822 116 52199	68	Ω	0,5W	
3412	4822 051 20472	4,7	kΩ	0,1W	
3413	4822 116 52283	4,7	kΩ	0,5W	
3414	4822 051 20472	4,7	kΩ	0,1W	
3415	4822 050 11002	1	kΩ	0,4W	
3416	4822 116 52234	100	kΩ	0,5W	
3417	4822 116 52283	4,7	kΩ	0,5W	
3418	4822 051 20333	33	kΩ	0,1W	
3419	4822 051 10102	1	kΩ	0,25W	
3420	4822 116 52224	470	Ω	0,5W	
3421	4822 051 10101	100	Ω	0,25W	not for LP
3422	4822 051 20182	1,8	kΩ	0,1W	
3423	4822 051 20182	1,8	kΩ	0,1W	
3424	4822 117 10833	10	kΩ	0,1W	
3425	4822 117 10833	10	kΩ	0,1W	
3426	4822 051 20682	6,8	kΩ	0,1W	
3427	4822 051 20122	1,2	kΩ	0,1W	
3428	4822 116 52283	4,7	kΩ	0,5W	
3429	4822 116 52283	4,7	kΩ	0,5W	
3430	4822 116 52224	470	Ω	0,5W	
3431	4822 050 11002	1	kΩ	0,4W	
3432	4822 050 11002	1	kΩ	0,4W	
3433	4822 117 10833	10	kΩ	0,1W	
3434	4822 051 10223	22	kΩ	0,25W	
3435	4822 051 20823	82	kΩ	0,1W	
3436	4822 051 20223	22	kΩ	0,1W	
3437	4822 117 10833	10	kΩ	0,1W	
3438	4822 051 20392	3,9	kΩ	0,1W	
3439	4822 051 20223	22	kΩ	0,1W	
3440	4822 051 10158	1,5	Ω	0,25W	
3441	4822 116 52233	10	kΩ	0,5W	
3442	4822 050 11002	1	kΩ	0,4W	
3443	4822 051 10102	1	kΩ	0,25W	
3444	4822 051 10103	10	kΩ	0,25W	
3445	4822 051 10223	22	kΩ	0,25W	
3446	4822 051 10102	1	kΩ	0,25W	
3447	4822 116 52233	10	kΩ	0,5W	

⚠......Safety component, use only this type

3448	4822 051 20223	22	kΩ	0,1W	not for ECO
3449	4822 051 20104	100	kΩ	0,1W	
3450	4822 051 20225	2,2	MΩ	0,1W	
3451	4822 116 52233	10	kΩ	0,5W	
3452	4822 051 20393	39	kΩ	0,1W	
3453	4822 051 20472	4,7	kΩ	0,1W	
3454	4822 051 20471	470	Ω	0,1W	
3455	4822 051 20221	220	Ω	0,1W	
3456	4822 051 20472	4,7	kΩ	0,1W	not for ECO
3457	4822 051 20472	4,7	kΩ	0,1W	
3458	4822 051 20472	4,7	kΩ	0,1W	
3459	4822 116 52233	10	kΩ	0,5W	not for ECO
3460	4822 050 11002	1	kΩ	0,4W	
3461	4822 116 52175	100	Ω	0,5W	
3462	4822 116 52175	100	Ω	0,5W	
3463	4822 116 52175	100	Ω	0,5W	only for 4 head
3464	4822 117 10833	10	kΩ	0,1W	
3465	4822 051 10102	1	kΩ	0,25W	
3466	4822 116 52224	470	Ω	0,5W	
3467	4822 051 20472	4,7	kΩ	0,1W	
3468	4822 116 52224	470	Ω	0,5W	
3471	4822 051 10472	4,7	kΩ	0,25W	not for ECO
3472	4822 051 20182	1,8	kΩ	0,1W	
3473	4822 051 20472	4,7	kΩ	0,1W	
3474	4822 051 20472	4,7	kΩ	0,1W	
3475	4822 116 52256	2,2	kΩ	0,5W	not for ECO
3476	4822 117 10833	10	kΩ	0,1W	
3477	4822 116 52303	8,2	kΩ	0,5W	
3478	4822 116 52233	10	kΩ	0,5W	
3479	4822 051 20158	1,5	Ω	0,1W	
3480	4822 051 20158	1,5	Ω	0,1W	
3481	4822 051 10102	1	kΩ	0,25W	not for 4 head
3482	4822 117 10833	10	kΩ	0,1W	
3483	4822 116 52283	4,7	kΩ	0,5W	
3484	4822 051 20472	4,7	kΩ	0,1W	not for 4 head
3485	4822 051 20222	2,2	kΩ	0,1W	
3486	4822 051 20182	1,8	kΩ	0,1W	
3487	4822 051 20472	4,7	kΩ	0,1W	
3489	4822 050 11002	1	kΩ	0,4W	
3490	4822 051 20222	2,2	kΩ	0,1W	
3491	4822 116 52233	10	kΩ	0,5W	
3492	4822 051 10102	1	kΩ	0,25W	
3500	4822 051 10102	1	kΩ	0,25W	
3501	4822 051 10102	1	kΩ	0,25W	
3502	4822 050 11002	1	kΩ	0,4W	
3503	4822 116 52219	330	Ω	0,5W	
3504	4822 117 10833	10	kΩ	0,1W	
3505	4822 116 52233	10	kΩ	0,5W	
3506	4822 051 10473	47	kΩ	0,25W	
3512	4822 051 20332	3,3	kΩ	0,1W	
3513	4822 051 20332	3,3	kΩ	0,1W	
3516	4822 051 20472	4,7	kΩ	0,1W	
3517	4822 051 10102	1	kΩ	0,25W	
3519	4822 051 10152	1,5	kΩ	0,25W	
3520	4822 051 20829	82	Ω	0,1W	
3530	4822 051 20682	6,8	kΩ	0,1W	
3531	4822 051 20682	6,8	kΩ	0,1W	
3532	4822 051 20224	220	kΩ	0,1W	
3540	4822 051 20471	470	Ω	0,1W	
3596	4822 116 52283	4,7	kΩ	0,5W	
3600	4822 051 20479	47	Ω	0,1W	
3601	4822 051 20104	100	kΩ	0,1W	
3602	4822 051 20331	330	Ω	0,1W	only for 4 head
3603	4822 051 20123	12	kΩ	0,1W	
3604	4822 051 20394	390	kΩ	0,1W	
3605	4822 051 20101	100	Ω	0,1W	
3606	4822 100 12157	10	kΩ		
3607	4822 051 20105	1	MΩ	0,1W	
3608	4822 117 10834	47	kΩ	0,1W	
3609	4822 051 20104	100	kΩ	0,1W	
3610	4822 117 10833	10	kΩ	0,1W	
3611	4822 051 20333	33	kΩ	0,1W	
3612	4822 051 10153	15	kΩ	0,25W	
3613	4822 051 20472	4,7	kΩ	0,1W	
3614	4822 051 20123	12	kΩ	0,1W	
3615	4822 051 20471	470	Ω		only for 4 head
3616	4822 051 20561	560	Ω	0,1W	

3617	4822 051 20223	22	kΩ	0,1W	
3618	4822 100 12159	100	kΩ		
3619	4822 051 10158	1,5	Ω	0,25W	
3620	4822 117 10834	47	kΩ	0,1W	
3621	4822 051 20223	22	kΩ	0,1W	
3622	4822 117 10834	47	kΩ	0,1W	
3623	4822 117 10833	10	kΩ	0,1W	
3624	4822 051 20332	3,3	kΩ	0,1W	
3625	4822 051 10339	33	Ω	0,25W	
3626	4822 051 20479	47	Ω	0,1W	
3627	4822 051 20332	3,3	kΩ	0,1W	
3628	4822 117 10833	10	kΩ	0,1W	
3629	4822 051 20224	220	kΩ	0,1W	
3702	4822 116 52175	100	Ω	0,5W	
3703	4822 116 52175	100	Ω	0,5W	
3704	4822 051 10008	0	Ω	0,25W	
3705	4822 116 52257	22	kΩ	0,5W	
3707	4822 051 20103	10	kΩ	0,1W	not for PAL BG
3708	4822 117 10833	10	kΩ	0,1W	
3723	4822 051 20154	150	kΩ	0,1W	not for SECAM L
3725	4822 051 20682	6,8	kΩ	0,1W	
3726	4822 051 20223	22	kΩ	0,1W	not for SECAM L
3727	4822 051 20152	1,5	kΩ	0,1W	
3728	4822 051 20823	82	kΩ	0,1W	not for SECAM L
3729	4822 051 20332	3,3	kΩ	0,1W	not for SECAM L
3730	4822 051 20183	18	kΩ	0,1W	
3731	4822 051 20183	18	kΩ	0,1W	
3737	4822 116 52256	2,2	kΩ	0,5W	not for SECAM L
3739	4822 117 10834	47	kΩ	0,1W	not for SECAM L
3742	4822 100 12158	22	kΩ		
3743	4822 051 20271	270	Ω	0,1W	
3745	4822 051 20561	560	Ω	0,1W	not for SECAM L
3749	4822 051 20561	560	Ω	0,1W	
3756	4822 051 20223	22	kΩ	0,1W	
3760	4822 051 20222	2,2	kΩ	0,1W	not for TXT
3761	4822 100 12156	4,7	kΩ	Trim	only for TXT
3762	4822 051 20222	2,2	kΩ	0,1W	
3782	4822 051 20222	2,2	kΩ	0,1W	not for SECAM L
3790	4822 116 52176	10	Ω	0,5W	
3791	4822 051 20331	330	Ω	0,1W	
3792	4822 116 52176	10	Ω	0,5W	
3795	4822 051 10102	1	kΩ	0,25W	
3796	4822 051 20101	100	Ω	0,1W	
3797	4822 051 20681	680	Ω	0,1W	
3798	4822 051 20101	100	Ω	0,1W	
3799	4822 051 20391	390	Ω	0,1W	
3854	4822 051 10008	0	Ω	0,25W	
3857	4822 051 10008	0	Ω	0,25W	
3858	4822 051 10008	0	Ω	0,25W	
3859	4822 051 10102	1	kΩ	0,25W	
3900	4822 051 10102	1	kΩ	0,25W	
3901	4822 051 20008	0	Ω	0,1W	only for SECAM L
3903	4822 051 20008	0	Ω	0,1W	
3906	4822 051 10008	0	Ω	0,25W	not for 4 head
3907	4822 051 10008	0	Ω	0,25W	only for TXT
3908	4822 051 20008	0	Ω	0,1W	only for TXT
3910	4822 051 20008	0	Ω	0,1W	only for 4 head
3912	4822 051 10008	0	Ω	0,25W	
3913	4822 051 10008	0	Ω	0,25W	
3914	4822 051 10008	0	Ω	0,25W	
3916	4822 051 10008	0	Ω	0,25W	
3917	4822 051 10008	0	Ω	0,25W	
3921	4822 051 10008	0	Ω	0,25W	
3922	4822 051 20008	0	Ω	0,1W	
3925	4822 051 10008	0	Ω	0,25W	not for TXT
3926	4822 051 10008	0	Ω	0,25W	
3927	4822 051 20008	0	Ω	0,1W	
3928	4822 051 20008	0	Ω	0,1W	not for TXT
3930	4822 051 20008	0	Ω	0,1W	
3931	4822 051 10008	0	Ω	0,25W	
3933	4822 051 20008	0	Ω	0,1W	
3940	4822 051 20008	0	Ω	0,1W	only for PAL
3945	4822 051 20008	0	Ω	0,1W	
3970	4822 051 10008	0	Ω	0,25W	
3971	4822 051 10008	0	Ω	0,25W	

⚠......Safety component, use only this type

COILS

5002	4822 157 53253	27	µH	
5003	4822 157 53265	100	µH	
5004	4822 157 52842	15	µH	
5005	4822 157 53253	27	µH	not for SECAM L
5006	4822 157 53251	8,2	µH	
5008	4822 157 53251	8,2	µH	
5009	4822 157 52842	15	µH	
5010	4822 157 53253	27	µH	
5011	4822 157 52842	15	µH	
5012	4822 157 53265	100	µH	
5013	4822 157 52842	15	µH	
5014	4822 157 53251	8,2	µH	
5015	4822 157 63676	56	µH	
5016	4822 157 53253	27	µH	
5017	4822 157 63676	56	µH	
5021	4822 157 50961	22	µH	
5022	4822 157 52285	6,8	µH	
5023	4822 157 63675	330	µH	not for SECAM L
5024	4822 157 63678	560	µH	not for SECAM L
5025	4822 157 53253	27	µH	
5401	4822 157 52286	22	µH	
5402 ⚠	4822 157 53005			
5501	4822 157 52285	6,8	µH	
5601	4822 157 70038			
5602	4822 158 10525	LAL 04T 331K		
5603	4822 157 53531			
5604	4822 157 62681			
5700	4822 157 70402	33	µH	
5701	4822 157 52285	6,8	µH	
5720	4822 157 62681			
5725	4822 157 70017			
5727	4822 157 63717	6,8	µH	
5740	4822 157 63343			

DIODES

6001	4822 130 30621	1N4148
6002	4822 130 30621	1N4148
6004	4822 130 31983	BAT85
6005	4822 130 30621	1N4148
6006	4822 130 30621	1N4148
6401	4822 130 30621	1N4148
6402	4822 130 30621	1N4148
6503	4822 130 30621	1N4148
6504	4822 130 31024	BZX79-B18
6508	4822 130 34278	BZX79-B6V8
6520	4822 130 34197	BZX79-B12
6522	4822 130 34197	BZX79-B12
6530	4822 130 34197	BZX79-B12
6531	4822 130 34197	BZX79-B12
6540	4822 130 34197	BZX79-B12
6703	5322 130 32076	BAT18
6790	4822 130 34278	BZX79-B6V8
6791	4822 130 34233	BZX79-B5V1

TRANSISTORS & IC's

7000	5322 130 41983	BC858B	
7001	5322 130 41982	BC848B	only for TXT
7002	5322 130 41982	BC848B	only for TXT
7006	5322 130 41983	BC858B	
7007	5322 130 41982	BC848B	
7008	4822 130 61495	DTA124EK	only for 4 head
7010	5322 130 41983	BC858B	
7014	5322 130 41982	BC848B	
7015	4822 130 61495	DTA124EK	not for SECAM L
7016	5322 130 41982	BC848B	not for SECAM L
7017	4822 130 42353	BSF19-F2	
7018	4822 130 60383	BF824	
7019	4822 130 42353	BSF19-F2	
7020	4822 130 61495	DTA124EK	only for 4 head
7025	5322 130 41982	BC848B	not for SECAM L
7026	5322 130 41982	BC848B	not for SECAM L
7029	4822 130 42353	BSF19-F2	
7030	5322 130 41982	BC848B	
7031	5322 130 41982	BC848B	
7032	5322 130 41982	BC848B	
7036	5322 130 41982	BC848B	
7037	4822 130 61495	DTA124EK	not for 4 head
7038	4822 130 61495	DTA124EK	not for 4 head
7051	4822 209 32155	LA7191	
7053	4822 209 60177	LM339D	only for Multistandard
7402	4822 209 30146	L2722	
7403	5322 130 41982	BC848B	
7404	5322 130 41982	BC848B	
7406	4822 130 60089	BD436	
7407	5322 130 41982	BC848B	
7408	4822 130 60729	DTC124EEKT-96	not for ECO
7409	4822 130 60729	DTC124EEKT-96	not for ECO
7410	4822 209 32736	TMP91C642N-MMTD4-4U	
7411	4822 209 30836	SAA1310/N2	
7412	4822 209 32283	ST24C08CB1	only for TXT
7412	4822 209 32709	ST24C04CB1	
7413	4822 130 61495	DTA124EK	
7500	5322 130 41983	BC858B	
7501	5322 130 41983	BC858B	
7504	4822 209 30692	MSM7403RS	
7506	5322 130 41982	BC848B	
7592	5322 209 14481	HEF4053BT	
7601	4822 209 31548	LA7282	
7602	5322 130 41982	BC848B	
7603	4822 130 41344	BC337-40	
7604	4822 130 41715	BC328-40	
7605	5322 130 41982	BC848B	
7606	5322 130 41982	BC848B	
7607	4822 130 41715	BC328-40	
7720	4822 209 31532	TDA9800/V3	
7721	5322 130 41982	BC848B	not for SECAM L
7723	5322 130 41983	BC858B	not for SECAM L
7761	5322 130 41983	BC858B	
7790	4822 130 44283	BC636	
7791	5322 130 41982	BC848B	
7792	5322 130 41982	BC848B	
7793	4822 130 44283	BC636	

⚠......Safety component, use only this type

CONNECTORS

4822 267 51281	15 pin
4822 267 51164	16 pin
4822 267 41062	6 pin
4822 267 41162	3 pin
4822 265 30987	7 pin
4822 267 40696	3 pin
4822 267 41161	4 pin
4822 267 41163	5 pin
4822 267 31513	SCART

MISCELLANEOUS

1002	4822 071 58001	Fuse 800mA	
1400	4822 071 56301	Fuse 630mA	
1401	4822 242 73809	Crystal 10 MHz	
1402	4822 071 58009	Fuse 80mA	
1500	4822 214 33417	Booster	only for SECAM
1500	4822 214 33713	MOD MDLK6D906A	only for PAL
1601	4822 242 81067	Crystal 4.433 619 MHz	
1603	4822 320 40168	Delay line	
1701	4822 210 10392	UV916E	
1720	4822 242 81261	OFWG1966M	only for PAL
1721	4822 242 81259	OFWK6256K	only for SECAM
1740	4822 242 72586	TPS5,5MB-TF20	
1741	4822 242 81572	TPS6,0MB	only for SECAM
1745	4822 242 72914	SFSH5,5MDB-TF21	
1746	4822 242 81265	SFSH6,0MDB-TF21	only for SECAM
1821	4822 242 81423	B39389-L9453-M100	only f. SECAM

CAPACITORS

2000	5322 122 32659	33	pF	50V
2001	4822 122 33514	68	pF	50V
2002	4822 126 10326	180	pF	63V
2003	4822 122 33575	220	pF	50V
2004	5322 122 32965	18	pF	50V
2009	4822 124 80535	10	µF	16V
2010	5322 122 34123	1	nF	50V
2011	4822 124 22826	10	µF	16V
2012	4822 124 80705	1	µF	50V
2013	4822 126 13222	390	pF	63V
2014	5322 122 32452	47	pF	63V
2015	4822 122 33177	10	nF	50V
2017	5322 122 31946	27	pF	50V
2018	5322 122 32531	100	pF	50V
2019	4822 126 12655	150	pF	63V
2020	4822 126 13221	100	pF	63V
2021	4822 124 80879	100	µF	16V
2023	4822 124 40196	220	µF	16V
2025	5322 122 32654	22	nF	63V
2027	4822 122 33515	82	pF	63V
2028	5322 122 33861	120	pF	50V
2029	5322 122 32452	47	pF	63V
2032	4822 124 23053	1	µF	50V
2033	5322 122 33861	120	pF	50V
2034	5322 122 32654	22	nF	63V
2035	4822 124 23053	1	µF	50V
2038	4822 122 33514	68	pF	50V
2039	5322 122 33538	150	pF	63V
2040	4822 124 41402	10	µF	50V
2041	4822 124 40248	10	µF	63V
2042	4822 126 10002	100	nF	25V
2043	5322 122 32654	22	nF	63V
2045	4822 122 33177	10	nF	50V
2046	4822 124 23053	1	µF	50V
2047	4822 124 23053	1	µF	50V
2048	4822 122 33797	47	nF	50V
2050	5322 122 31946	27	pF	50V
2052	4822 124 40248	10	µF	63V
2055	4822 126 13219	100	nF	25V
2056	4822 122 33797	47	nF	50V
2057	4822 122 33797	47	nF	50V
2058	4822 124 80227	2,2	µF	35V
2059	4822 124 23053	1	µF	50V
2061	5322 122 34123	1	nF	50V
2063	5322 122 34123	1	nF	50V
2073	5322 122 34123	1	nF	50V
2076	4822 122 32442	10	nF	50V
2079	4822 122 33177	10	nF	50V
2080	5322 122 34123	1	nF	50V
2081	5322 122 34123	1	nF	50V
2088	4822 126 13219	100	nF	25V
2090	4822 126 10002	100	nF	25V
2095	5322 122 32452	47	pF	63V
2096	5322 122 32452	47	pF	63V
2098	5322 122 31946	27	pF	50V
2101	5322 122 33861	120	pF	50V
2106	5322 122 32481	15	pF	50V
2402	5322 124 41431	22	µF	35V
2403	4822 126 10002	100	nF	25V
2404	5322 126 10223	4,7	nF	63V
2405	5322 122 32658	22	pF	50V
2406	5322 122 32658	22	pF	50V
2407	4822 124 41584	100	µF	10V
2408	4822 126 10002	100	nF	25V
2409	4822 122 33177	10	nF	50V
2410	4822 124 40433	47	µF	25V
2411	5322 126 10223	4,7	nF	63V
2412	4822 124 40433	47	µF	25V
2413	5322 122 34123	1	nF	50V
2414	4822 122 31981	33	nF	50V
2415	4822 126 10002	100	nF	25V
2416	4822 126 10002	100	nF	25V
2417	4822 124 40433	47	µF	25V
2418	4822 122 33177	10	nF	50V
2419	5322 126 10223	4,7	nF	63V
2420	4822 124 40433	47	µF	25V
2421	4822 122 33177	10	nF	50V
2422	4822 124 40433	47	µF	25V
2423	4822 126 10002	100	nF	25V
2428	5322 122 32654	22	nF	63V
2431	4822 124 40246	4,7	µF	63V
2504	4822 126 10002	100	nF	25V
2505	4822 126 10002	100	nF	25V
2506	4822 126 10002	100	nF	25V
2507	4822 124 80879	100	µF	16V
2530	5322 122 32268	470	pF	50V
2531	5322 122 32268	470	pF	50V
2540	5322 122 32268	470	pF	50V
2600	5322 122 34123	1	nF	50V
2601	5322 122 31865	1,5	nF	63V
2602	4822 126 10002	100	nF	25V
2604	4822 122 33177	10	nF	50V
2605	4822 124 40433	47	µF	25V
2606	4822 126 10002	100	nF	25V
2607	4822 126 10002	100	nF	25V
2608	5322 122 32268	470	pF	50V
2609	4822 124 40433	47	µF	25V
2610	4822 122 33175	2,2	nF	50V
2611	4822 124 40433	47	µF	25V
2612	5322 122 32654	22	nF	63V
2613	4822 122 33177	10	nF	50V
2614	4822 124 40242	1	µF	63V
2615	4822 124 40433	47	µF	25V
2616	4822 124 40433	47	µF	25V
2617	4822 124 40433	47	µF	25V
2618	5322 122 31863	330	pF	50V
2619	4822 124 40433	47	µF	25V
2620	4822 121 43526	47	nF	250V
2621	5322 122 34123	1	nF	50V
2622	4822 121 41935	12	nF	250V
2623	4822 122 33177	10	nF	50V
2624	5322 122 34123	1	nF	50V
2625	5322 121 42489	33	nF	250V
2626	4822 121 43187	27	nF	250V
2627	4822 121 41857	10	nF	250V
2628	4822 124 40433	47	µF	25V
2629	4822 124 40433	47	µF	25V
2631	4822 124 40242	1	µF	63V
2632	5322 122 32268	470	pF	50V

⚠......Safety component, use only this type

2633	5322 124 41431	22	µF	35V	
2700	4822 126 10002	100	nF	25V	
2701	4822 126 10002	100	nF	25V	
2702	4822 126 10002	100	nF	25V	
2703	4822 124 40248	10	µF	63V	
2720	5322 122 32531	100	pF	50V	
2721	4822 122 33177	10	nF	50V	only for SECAM
2722	4822 122 33177	10	nF	50V	only for SECAM
2725	4822 126 10002	100	nF	25V	
2726	5322 122 32654	22	nF	63V	
2727	4822 124 41576	2,2	µF	50V	
2728	4822 124 40248	10	µF	63V	
2737	4822 126 10002	100	nF	25V	
2738	5322 124 41431	22	µF	35V	
2739	4822 126 10002	100	nF	25V	
2740	4822 124 41576	2,2	µF	50V	
2741	4822 126 10002	100	nF	25V	
2820	4822 122 33177	10	nF	50V	only for SECAM
2821	4822 122 33177	10	nF	50V	only for SECAM
2822	4822 126 13245	12	pF		only for SECAM
2824	4822 126 12945	8,2	pF		
2834	5322 122 32531	100	pF	50V	only for SECAM
2840	4822 124 40248	10	µF	63V	only for SECAM
2841	5322 122 32654	22	nF	63V	only for SECAM
2842	4822 124 80885	220	pF	16V	only for SECAM
2843	4822 124 40248	10	µF	63V	
2844	4822 124 80885	220	pF	16V	only for SECAM
2845	4822 124 40246	4,7	µF	63V	only for SECAM
2846	4822 124 40246	4,7	µF	63V	only for SECAM

RESISTORS

3001	4822 051 20471	470	Ω	0,1W	
3002	4822 051 20473	47	kΩ	0,1W	
3008	4822 051 20223	22	kΩ	0,1W	
3010	4822 100 12156	4,7	kΩ		
3012	4822 051 20332	3,3	kΩ	0,1W	
3017	4822 051 20103	10	kΩ	0,1W	
3018	4822 100 12156	4,7	kΩ		
3019	4822 051 20682	6,8	kΩ	0,1W	
3020	4822 100 12156	4,7	kΩ		
3021	4822 051 20272	2,7	kΩ	0,1W	
3022	4822 051 20821	820	Ω	0,1W	
3023	4822 051 10102	1	kΩ	0,25W	
3025	4822 051 20104	100	kΩ	0,1W	
3026	4822 051 20472	4,7	kΩ	0,1W	
3028	4822 051 20472	4,7	kΩ	0,1W	
3029	4822 116 52283	4,7	kΩ	0,5W	
3030	4822 051 20222	2,2	kΩ	0,1W	
3031	4822 051 20104	100	kΩ	0,1W	
3033	4822 051 10102	1	kΩ	0,25W	
3034	4822 051 20222	2,2	kΩ	0,1W	
3036	4822 051 20392	3,9	kΩ	0,1W	
3037	4822 051 20122	1,2	kΩ	0,1W	
3038	4822 051 20392	3,9	kΩ	0,1W	
3039	4822 100 12157	10	kΩ		
3040	4822 051 20222	2,2	kΩ	0,1W	
3041	4822 051 20472	4,7	kΩ	0,1W	
3043	4822 051 20561	560	Ω	0,1W	
3044	4822 051 10102	1	kΩ	0,25W	
3045	4822 051 20472	4,7	kΩ	0,1W	
3046	4822 051 20222	2,2	kΩ	0,1W	
3051	4822 051 20105	1	MΩ	0,1W	
3052	4822 051 20822	8,2	kΩ	0,1W	
3054	4822 051 20562	5,6	kΩ	0,1W	
3055	4822 051 20821	820	Ω	0,1W	
3060	4822 051 20222	2,2	kΩ	0,1W	
3061	4822 051 20101	100	Ω	0,1W	
3062	4822 051 20182	1,8	kΩ	0,1W	
3063	4822 051 20271	270	Ω	0,1W	
3064	4822 051 20561	560	Ω	0,1W	
3089	4822 051 10102	1	kΩ	0,25W	
3090	4822 051 10102	1	kΩ	0,25W	
3091	4822 051 20562	5,6	kΩ	0,1W	
3092	4822 051 20332	3,3	kΩ	0,1W	
3093	4822 051 20152	1,5	kΩ	0,1W	
3094	4822 051 20222	2,2	kΩ	0,1W	
3095	4822 051 20472	4,7	kΩ	0,1W	
3096	4822 100 12157	10	kΩ		
3097	4822 051 20332	3,3	kΩ	0,1W	
3098	4822 100 12157	10	kΩ		only for SECAM
3099	4822 100 12155	2,2	kΩ		
3100	4822 051 10102	1	kΩ	0,25W	
3104	4822 051 20472	4,7	kΩ	0,1W	
3105	4822 051 20122	1,2	kΩ	0,1W	
3106	4822 051 20271	270	Ω	0,1W	
3116	4822 051 20123	12	kΩ	0,1W	
3117	4822 051 20183	18	kΩ	0,1W	
3118	4822 051 20222	2,2	kΩ	0,1W	
3119	4822 051 20101	100	Ω	0,1W	
3128	4822 051 20223	22	kΩ	0,1W	
3132	4822 051 20681	680	Ω	0,1W	
3135	4822 051 20104	100	kΩ	0,1W	
3137	4822 051 10102	1	kΩ	0,25W	
3138	4822 051 20103	10	kΩ	0,1W	
3400	4822 051 20222	2,2	kΩ	0,1W	
3401	4822 051 10102	1	kΩ	0,25W	
3402	4822 051 20472	4,7	kΩ	0,1W	
3408	4822 051 20103	10	kΩ	0,1W	
3409	4822 050 11002	1	kΩ	0,4W	
3410	4822 116 52199	68	Ω	0,5W	
3411	4822 116 52199	68	Ω	0,5W	
3412	4822 051 20472	4,7	kΩ	0,1W	
3413	4822 116 52283	4,7	kΩ	0,5W	
3414	4822 051 20472	4,7	kΩ	0,1W	
3415	4822 051 10104	100	kΩ	0,25W	
3416	4822 116 52234	100	kΩ	0,5W	
3417	4822 116 52249	1,8	kΩ	0,5W	
3418	4822 051 20333	33	kΩ	0,1W	
3419	4822 051 10102	1	kΩ	0,25W	
3420	4822 051 20103	10	kΩ	0,1W	
3422	4822 051 20182	1,8	kΩ	0,1W	
3423	4822 051 20182	1,8	kΩ	0,1W	
3424	4822 051 20103	10	kΩ	0,1W	
3425	4822 051 20103	10	kΩ	0,1W	
3426	4822 051 20682	6,8	kΩ	0,1W	
3429	4822 051 20472	4,7	kΩ	0,1W	
3430	4822 051 20472	4,7	kΩ	0,1W	
3431	4822 051 20103	10	kΩ	0,1W	
3432	4822 051 10102	1	kΩ	0,25W	
3433	4822 051 20103	10	kΩ	0,1W	
3434	4822 051 20223	22	kΩ	0,1W	
3435	4822 051 20823	82	kΩ	0,1W	
3436	4822 051 20223	22	kΩ	0,1W	
3437	4822 051 20103	10	kΩ	0,1W	
3438	4822 051 20392	3,9	kΩ	0,1W	
3439	4822 051 20223	22	kΩ	0,1W	
3440	4822 051 20158	1,5	Ω	0,1W	
3441	4822 051 20103	10	kΩ	0,1W	
3442	4822 050 11002	1	kΩ	0,4W	
3443	4822 051 20103	10	kΩ	0,1W	
3444	4822 051 20103	10	kΩ	0,1W	
3445	4822 051 10223	22	kΩ	0,25W	
3446	4822 051 10103	10	kΩ	0,25W	
3447	4822 116 52233	10	kΩ	0,5W	
3448	4822 051 20223	22	kΩ	0,1W	
3449	4822 051 20104	100	kΩ	0,1W	
3450	4822 051 20225	2,2	MΩ	0,1W	
3451	4822 116 52233	10	kΩ	0,5W	
3452	4822 051 20393	39	kΩ	0,1W	
3453	4822 051 20472	4,7	kΩ	0,1W	
3454	4822 051 20471	470	Ω	0,1W	
3455	4822 051 20221	220	Ω	0,1W	
3456	4822 051 20472	4,7	kΩ	0,1W	
3457	4822 051 20472	4,7	kΩ	0,1W	
3458	4822 051 20472	4,7	kΩ	0,1W	
3459	4822 116 52283	4,7	kΩ	0,5W	
3461	4822 116 52175	100	Ω	0,5W	
3462	4822 116 52175	100	Ω	0,5W	
3465	4822 051 10102	1	kΩ	0,25W	
3466	4822 116 52224	470	Ω	0,5W	
3467	4822 051 20472	4,7	kΩ	0,1W	
3468	4822 116 52224	470	Ω	0,5W	

⚠......Safety component, use only this type

3470	4822 051 20104	100	kΩ	0,1W	
3471	4822 051 20104	100	kΩ	0,1W	
3474	4822 051 20471	470	Ω	0,1W	
3475	4822 116 52256	2,2	kΩ	0,5W	
3476	4822 051 20272	2,7	kΩ	0,1W	
3477	4822 051 20103	10	kΩ	0,1W	
3478	4822 051 20472	4,7	kΩ	0,1W	
3479	4822 051 20471	470	Ω	0,1W	
3481	4822 051 20473	47	kΩ	0,1W	
3482	4822 051 20103	10	kΩ	0,1W	
3483	4822 051 20104	100	kΩ	0,1W	
3484	4822 051 20472	4,7	kΩ	0,1W	
3485	4822 051 20103	10	kΩ	0,1W	
3487	4822 051 20103	10	kΩ	0,1W	
3488	4822 051 20182	1,8	kΩ	0,1W	
3489	4822 116 52256	2,2	kΩ	0,5W	
3490	4822 051 20681	680	Ω	0,1W	
3491	4822 051 10102	1	kΩ	0,25W	
3492	4822 116 52176	10	Ω	0,5W	
3493	4822 051 20331	330	Ω	0,1W	
3494	4822 051 20101	100	Ω	0,1W	
3495	4822 051 20101	100	Ω	0,1W	
3496	4822 116 52176	10	Ω	0,5W	
3498	4822 050 11002	1	kΩ	0,4W	
3499	4822 051 20223	22	kΩ	0,1W	
3500	4822 051 10102	1	kΩ	0,4W	only for PAL
3501	4822 051 10102	1	kΩ	0,4W	only for PAL
3502	4822 051 10102	1	kΩ	0,4W	only for PAL
3503	4822 116 52224	470	Ω	0,5W	
3504	4822 051 20104	100	kΩ	0,1W	
3505	4822 116 52271	33	kΩ	0,5W	
3506	4822 051 10102	1	kΩ	0,4W	only for PAL
3516	4822 051 20472	4,7	kΩ	0,1W	only for PAL
3517	4822 050 11002	1	kΩ	0,4W	
3519	4822 116 52243	1,5	kΩ	0,5W	
3520	4822 051 20829	82	Ω	0,1W	
3521	4822 051 20829	82	Ω	0,1W	
3522	4822 051 20829	82	Ω	0,1W	
3530	4822 051 20682	6,8	kΩ	0,1W	
3531	4822 051 20682	6,8	kΩ	0,1W	
3532	4822 051 20224	220	kΩ	0,1W	
3533	4822 051 20332	3,3	kΩ	0,1W	
3534	4822 051 20332	3,3	kΩ	0,1W	
3535	4822 051 10473	47	kΩ	0,25W	
3536	4822 051 20105	1	MΩ	0,1W	
3537	4822 051 20562	5,6	kΩ	0,1W	
3538	4822 051 10102	1	kΩ	0,25W	
3539	4822 116 52233	10	kΩ	0,5W	
3540	4822 051 20471	470	Ω	0,1W	
3596	4822 051 20103	10	kΩ	0,1W	
3597	4822 051 20104	100	kΩ	0,1W	
3600	4822 051 20479	47	Ω	0,1W	
3601	4822 051 20104	100	kΩ	0,1W	
3602	4822 051 20331	330	Ω	0,1W	
3603	4822 051 20123	12	kΩ	0,1W	
3604	4822 051 20394	390	kΩ	0,1W	
3605	4822 051 20101	100	Ω	0,1W	
3606	4822 100 12157	10	kΩ		
3607	4822 051 20105	1	MΩ	0,1W	
3608	4822 051 20473	47	kΩ	0,1W	
3610	4822 051 20103	10	kΩ	0,1W	
3611	4822 116 52271	33	kΩ	0,5W	
3612	4822 051 20103	10	kΩ	0,1W	
3613	4822 116 52256	2,2	kΩ	0,5W	
3614	4822 051 20103	10	kΩ	0,1W	
3615	4822 051 20471	470	Ω	0,1W	
3616	4822 051 10102	1	kΩ	0,25W	
3617	4822 051 20223	22	kΩ	0,1W	
3618	4822 100 12159	100	kΩ		
3619	4822 051 20158	1,5	Ω	0,1W	
3620	4822 051 20473	47	kΩ	0,1W	
3621	4822 051 20103	10	kΩ	0,1W	
3623	4822 051 20103	10	kΩ	0,1W	
3624	4822 051 20332	3,3	kΩ	0,1W	
3625	4822 051 20339	33	Ω	0,1W	
3626	4822 051 20479	47	Ω	0,1W	
3627	4822 051 20332	3,3	kΩ	0,1W	
3628	4822 051 20103	10	kΩ	0,1W	
3630	4822 051 20333	33	kΩ	0,1W	
3631	4822 051 20158	1,5	Ω	0,1W	
3632	4822 051 20331	330	Ω	0,1W	
3633	4822 051 20331	330	Ω	0,1W	
3634	4822 051 20183	18	kΩ	0,1W	
3635	4822 116 52283	4,7	kΩ	0,5W	
3636	4822 051 20473	47	kΩ	0,1W	
3637	4822 051 20109	10	Ω	0,1W	
3638	4822 051 20109	10	Ω	0,1W	
3701	4822 051 10102	1	kΩ	0,25W	
3702	4822 051 20101	100	Ω	0,1W	
3703	4822 051 20101	100	Ω	0,1W	
3704	4822 051 20123	12	kΩ	0,1W	
3705	4822 051 20103	10	kΩ	0,1W	
3707	4822 051 20103	10	kΩ	0,1W	only for SECAM
3708	4822 051 20103	10	kΩ	0,1W	only for PAL
3720	4822 051 20822	8,2	kΩ	0,1W	only for SECAM
3721	4822 051 20122	1,2	kΩ	0,1W	only for SECAM
3723	4822 051 20104	100	kΩ	0,1W	
3725	4822 051 20682	6,8	kΩ	0,1W	
3726	4822 051 20223	22	kΩ	0,1W	
3727	4822 051 20152	1,5	kΩ	0,1W	
3728	4822 051 20563	56	kΩ	0,1W	
3729	4822 051 20332	3,3	kΩ	0,1W	
3730	4822 051 20183	18	kΩ	0,1W	
3731	4822 051 20183	18	kΩ	0,1W	
3737	4822 051 20222	2,2	kΩ	0,1W	
3739	4822 051 20473	47	kΩ	0,1W	
3741	4822 100 12156	4,7	kΩ		only for SECAM
3742	4822 100 12158	22	kΩ		
3743	4822 051 20271	270	Ω	0,1W	only for PAL
3743	4822 051 20221	220	Ω	0,1W	only for SECAM
3744	4822 051 20104	100	kΩ	0,1W	
3745	4822 051 20561	560	Ω	0,1W	
3746	4822 051 20561	560	Ω	0,1W	only for SECAM
3749	4822 051 20561	560	Ω	0,1W	
3760	4822 051 20222	2,2	kΩ	0,1W	
3762	4822 051 20222	2,2	kΩ	0,1W	
3782	4822 051 20272	2,7	kΩ	0,1W	
3820	4822 051 20822	8,2	kΩ	0,1W	only for SECAM
3821	4822 051 20822	8,2	kΩ	0,1W	only for SECAM
3822	4822 051 20104	100	kΩ	0,1W	only for SECAM
3823	4822 100 12159	100	kΩ		only for SECAM
3824	4822 051 20104	100	kΩ	0,1W	only for SECAM
3825	4822 051 20104	100	kΩ	0,1W	only for SECAM
3826	4822 051 10103	10	kΩ	0,25W	only for SECAM
3827	4822 051 20332	3,3	kΩ	0,1W	only for SECAM
3829	4822 051 20103	10	kΩ	0,1W	only for SECAM
3831	4822 051 20104	100	kΩ	0,1W	only for SECAM
3832	4822 051 20104	100	kΩ	0,1W	only for SECAM
3833	4822 051 20103	10	kΩ	0,1W	only for SECAM
3834	4822 051 20103	10	kΩ	0,1W	only for SECAM
3835	4822 051 10103	10	kΩ	0,25W	only for SECAM
3854	4822 051 10008	0	Ω	0,25W	
3855	4822 051 10008	0	Ω	0,25W	
3858	4822 051 20008	0	Ω	0,1W	
3859	4822 051 10008	0	Ω	0,25W	
3904	4822 051 10008	0	Ω	0,25W	
3907	4822 051 20008	0	Ω	0,1W	
3911	4822 051 20008	0	Ω	0,1W	
3913	4822 051 10008	0	Ω	0,25W	
3914	4822 051 20008	0	Ω	0,1W	
3915	4822 051 10008	0	Ω	0,25W	
3916	4822 051 10008	0	Ω	0,25W	
3918	4822 051 10008	0	Ω	0,25W	
3920	4822 051 10008	0	Ω	0,25W	
3921	4822 051 10008	0	Ω	0,25W	
3922	4822 051 20008	0	Ω	0,1W	
3923	4822 051 10008	0	Ω	0,25W	
3924	4822 051 10008	0	Ω	0,25W	
3925	4822 051 20008	0	Ω	0,1W	
3926	4822 051 20008	0	Ω	0,1W	
3927	4822 051 10008	0	Ω	0,25W	
3928	4822 051 10008	0	Ω	0,25W	
3930	4822 051 20008	0	Ω	0,1W	only for SECAM
3931	4822 051 20008	0	Ω	0,1W	

⚠......Safety component, use only this type

3932	4822 051 10008	0	Ω	0,25W	
3933	4822 051 20008	0	Ω	0,1W	
3940	4822 051 20008	0	Ω	0,1W	only for PAL

COILS

5002	4822 157 53253	27	µH	
5003	4822 157 53265	100	µH	
5004	4822 157 52842	15	µH	
5005	4822 157 53253	27	µH	
5006	4822 157 53251	8,2	µH	
5014	4822 157 53251	8,2	µH	
5015	4822 157 63676	56	µH	
5016	4822 157 53253	27	µH	
5017	4822 157 63676	56	µH	
5021	4822 157 50961	22	µH	
5023	4822 157 63675	330	µH	only for SECAM
5024	4822 157 63678	560	µH	only for SECAM
5025	4822 157 53253	27	µH	
5401	4822 157 50961	22	µH	
5402	4822 157 53005			
5501	4822 157 52285	6,8	µH	
5601	4822 157 70038			
5603	4822 157 53531			
5604	4822 157 53531			
5605	4822 157 62681			
5700	4822 157 52285	6,8	µH	
5720	4822 157 62681			
5723	4822 157 53251	8,2	µH	
5724	4822 157 53251	8,2	µH	
5725	4822 157 70877			
5727	4822 157 52285	6,8	µH	
5728	4822 157 52285	6,8	µH	
5740	4822 157 71184	10	µH	

DIODES

6002	4822 130 30621	1N4148	
6004	4822 130 31983	BAT85	
6401	4822 130 30621	1N4148	
6402	4822 130 30621	1N4148	
6403	4822 130 34233	BZX79-B5V1	
6404	4822 130 34278	BZX79-B6V8	
6406	4822 130 30621	1N4148	
6504	4822 130 31024	BZX79-B18	
6505	4822 130 34278	BZX79-B6V8	
6508	4822 130 34278	BZX79-B6V8	
6520	4822 130 34197	BZX79-B12	
6522	4822 130 34197	BZX79-B12	
6530	4822 130 34197	BZX79-B12	
6531	4822 130 34197	BZX79-B12	
6540	4822 130 34197	BZX79-B12	
6720	5322 130 32076	BAT18	only for SECAM
6721	5322 130 32076	BAT18	only for SECAM
6820	4822 130 83702	BB811	only for SECAM
6821	4822 130 83703	BA582	only for SECAM
6822	4822 130 83703	BA582	only for SECAM
6823	5322 130 32076	BAT18	only for SECAM
6824	5322 130 32076	BAT18	only for SECAM

TRANSISTORS & IC's

7000	5322 130 41983	BC858B	
7004	4822 209 30692	MSM7403RS	
7005	4822 130 60729	DTC124EEKT-96	
7006	5322 130 41983	BC858B	
7007	5322 130 41982	BC848B	
7010	5322 130 41983	BC858B	
7014	5322 209 11306	HEF4094BT	
7015	4822 130 61495	DTA124EK	
7016	5322 130 41982	BC848B	
7021	5322 130 41982	BC848B	
7024	4822 130 60729	DTC124EEKT-96	
7025	5322 130 41982	BC848B	
7026	5322 130 41982	BC848B	
7027	4822 130 60729	DTC124EEKT-96	
7029	4822 130 42353	BSF19-F2	
7030	5322 130 41982	BC848B	
7031	5322 130 41982	BC848B	
7032	5322 130 41982	BC848B	
7037	5322 130 41983	BC858B	
7038	4822 130 61495	DTA124EK	
7051	4822 209 32155	LA7191	
7053	4822 209 60177	LM339D	
7402	4822 209 30146	L2722	
7403	5322 130 41982	BC848B	
7404	5322 130 41982	BC848B	
7405	4822 130 61495	DTA124EK	
7406	4822 130 60089	BD436	
7407	5322 130 41982	BC848B	
7408	4822 130 60729	DTC124EEKT-96	
7410	4822 209 33473	TMP91C642AN/NTDP4-1U	
7411	4822 209 30836	SAA1310/N2	
7412	4822 209 32709	ST24C04CB1	
7413	5322 209 11306	HEF4094BT	
7420	5322 130 41982	BC848B	
7421	5322 130 41982	BC848B	
7423	4822 130 44283	BC636	
7424	4822 130 44283	BC636	
7500	5322 130 41983	BC858B	only for PAL
7501	5322 130 41983	BC858B	
7502	4822 130 60729	DTC124EEKT-96	
7503	5322 130 41983	BC858B	
7504	4822 130 60729	DTC124EEKT-96	
7506	5322 130 41982	BC848B	only for PAL
7592	5322 209 11102	HEF4052BT	
7601	4822 209 31548	LA7282	
7602	4822 130 60729	DTC124EEKT-96	
7604	4822 130 41715	BC328-40	
7605	4822 130 60729	DTC124EEKT-96	
7606	5322 130 41982	BC848B	
7607	4822 130 41715	BC328-40	
7608	5322 130 41983	BC858B	
7609	4822 130 42615	BC817-40	
7610	5322 130 41982	BC848B	
7611	5322 130 41982	BC848B	
7612	4822 130 42615	BC817-40	
7613	5322 130 41983	BC858B	
7720	4822 209 31554	TDA9800/V3	only for PAL
7720	4822 209 31554	TDA9802/V3	only for SECAM
7721	5322 130 41982	BC848B	
7723	5322 130 41983	BC858B	
7727	5322 130 41982	BC848B	only for SECAM
7761	5322 130 41983	BC858B	
7823	5322 130 41982	BC848B	only for SECAM
7824	5322 130 41982	BC848B	only for SECAM
7840	4822 209 31555	TDA9830/V1	only for SECAM

⚠......Safety component, use only this type

CHROMA SECAM PROCESSING CSP PANEL

CAPACITORS

2053	5322 122 34123	1	nF	50V
2200	4822 122 33177	10	nF	50V
2201	5322 122 32658	22	pF	50V
2202	5322 122 34123	1	nF	50V
2203	5322 122 32531	100	pF	50V
2204	4822 122 33177	10	nF	50V
2205	5322 122 34123	1	nF	50V
2206	5322 122 32659	33	pF	50V
2207	4822 122 33177	10	nF	50V
2208	4822 122 33177	10	nF	50V
2209	4822 122 31947	100	nF	63V
2210	4822 122 33177	10	nF	50V
2212	4822 122 33177	10	nF	50V
2213	5322 122 34123	1	nF	50V
2214	4822 122 31947	100	nF	63V
2216	4822 122 33575	220	pF	50V
2217	4822 122 31947	100	nF	63V
2218	4822 122 31947	100	nF	63V
2219	4822 122 33177	10	nF	50V
2220	4822 122 32442	10	nF	50V
2222	5322 122 32658	22	pF	50V
2223	5322 122 32531	100	pF	50V
2224	5322 122 33538	150	pF	63V
2225	4822 122 33177	10	nF	50V
2240	4822 122 31797	22	nF	63V

RESISTORS

3053	4822 051 20223	22	kΩ	0,1W
3056	4822 051 10102	1	kΩ	0,25W
3200	4822 051 20331	330	Ω	0,1W
3201	4822 051 20332	3,3	kΩ	0,1W
3202	4822 051 20821	820	Ω	0,1W
3203	4822 051 20681	680	Ω	0,1W
3204	4822 051 10102	1	kΩ	0,25W
3205	4822 051 20391	390	Ω	0,1W
3206	4822 051 20821	820	Ω	0,1W
3207	4822 051 10102	1	kΩ	0,25W
3208	4822 051 20122	1,2	kΩ	0,1W
3209	4822 051 20222	2,2	kΩ	0,1W
3211	4822 051 10102	1	kΩ	0,25W
3212	4822 051 20152	1,5	kΩ	0,1W
3213	4822 051 20103	10	kΩ	0,1W
3214	4822 051 20333	33	kΩ	0,1W
3221	4822 051 20222	2,2	kΩ	0,1W
3224	4822 051 20222	2,2	kΩ	0,1W
3225	4822 051 10102	1	kΩ	0,25W
3226	4822 051 20183	18	kΩ	0,1W
3227	4822 051 20222	2,2	kΩ	0,1W
3228	4822 051 20152	1,5	kΩ	0,1W
3229	4822 051 20103	10	kΩ	0,1W
3232	4822 051 10102	1	kΩ	0,25W
3233	4822 051 20561	560	Ω	0,1W
3234	4822 051 20472	4,7	kΩ	0,1W
3240	4822 051 10102	1	kΩ	0,25W
3241	4822 051 20473	47	kΩ	0,1W
3242	4822 051 20473	47	kΩ	0,1W
3243	4822 051 10102	1	kΩ	0,25W
3901	4822 051 20008	0	Ω	0,1W
3902	4822 051 20008	0	Ω	0,1W

COILS

5201	4822 157 63661		
5202	4822 157 63661		
5203	4822 157 63676	56	µH
5204	4822 157 52842	15	µH
5205	4822 157 63675	330	µH
5207	4822 157 63659		
5209	4822 156 21456		
5211	4822 156 21459		
5213	4822 157 63678	560	µH
5214	4822 157 53265	100	µH

TRANSISTORS & IC's

7200	4822 130 42353	BSF19-F2
7201	5322 130 41982	BC848B
7202	4822 209 73852	PMBT2369
7203	5322 130 41982	BC848B
7205	5322 130 41982	BC848B
7207	4822 130 60145	DTC124E/25
7240	5322 130 41982	BC848B
7520	4822 209 73599	TDA4725/V2

⚠......Safety component, use only this type

IN/OUT, VPS   MSIO/VPS PANEL

CONNECTORS

4822 265 41295	15 pin
4822 265 51352	Scart

CAPACITORS

2510	4822 122 31947	100	nF		
2511	4822 124 80454	10	µF	16V	
2541	4822 124 40248	10	µF	63V	
2561	4822 124 80454	10	µF	16V	
2570	4822 122 31727	470	pF	63V	
2571	4822 122 31727	470	pF	63V	
2580	4822 122 31727	470	pF	63V	
2581	4822 124 40248	10	µF	63V	
2590	4822 122 31947	100	nF	63V	
2591	4822 122 32442	10	nF	50V	
2600	4822 122 31825	27	pF		only for VPS
2601	4822 122 31981	33	nF		only for VPS
2602	4822 122 31947	100	nF		only for VPS
2603	4822 122 31947	100	nF	63V	

RESISTORS

3508	4822 051 10471	470	Ω	0,25W	
3509	4822 051 10561	560	Ω	0,25W	
3511	4822 051 10471	470	Ω		
3512	4822 051 10122	1,2	kΩ		
3513	4822 051 10123	12	kΩ		
3514	4822 051 10123	12	kΩ	0,25W	
3515	4822 051 10103	10	kΩ	0,25W	
3516	4822 051 10229	22	Ω		
3517	4822 051 10101	100	Ω		
3518	4822 051 10101	100	Ω		
3541	4822 051 10104	100	kΩ	0,25W	
3542	4822 051 10472	4,7	kΩ	0,25W	
3550	4822 051 10829	82	Ω	0,25W	
3551	4822 051 10682	6,8	kΩ	0,25W	
3560	4822 051 10102	1	kΩ		
3561	4822 051 10471	470	Ω		
3562	4822 051 10122	1,2	kΩ		
3563	4822 051 10123	12	kΩ		
3564	4822 051 10123	12	kΩ	0,25W	
3565	4822 051 10103	10	kΩ	0,25W	
3566	4822 051 10101	100	Ω		
3567	4822 051 10101	100	Ω		
3568	4822 051 10229	22	Ω		
3570	4822 051 10682	6,8	kΩ	0,25W	
3571	4822 051 10682	6,8	kΩ	0,25W	
3572	4822 051 10224	220	kΩ	0,25W	
3581	4822 051 10104	100	kΩ	0,25W	
3582	4822 051 10472	4,7	kΩ	0,25W	
3583	4822 051 10224	220	kΩ	0,25W	
3584	4822 051 10471	470	Ω	0,25W	
3600	4822 051 10101	100	Ω	1/8W	only for VPS
3601	4822 051 10101	100	Ω	1/8W	only for VPS
3602	4822 051 10332	3,3	kΩ	1/8W	only for VPS
3603	4822 051 10682	6,8	kΩ	1/8W	only for VPS
3604	4822 051 10105	1	MΩ	1/8W	only for VPS
3605	4822 051 10562	5,6	kΩ	1/8W	only for VPS
3606	4822 051 10105	1	MΩ	1/8W	only for VPS
3607	4822 051 10101	100	Ω	1/8W	only for VPS
3608	4822 051 10104	100	kΩ	1/8W	only for VPS
3609	4822 051 10105	1	MΩ	1/8W	only for VPS
3802	4822 051 10008	0	Ω	0,25W	
3906	4822 051 10008	0	Ω	0,25W	
3910	4822 051 10008	0	Ω	0,25W	
3911	4822 051 10008	0	Ω	0,25W	
3913	4822 051 10008	0	Ω	0,25W	
3920	4822 051 10008	0	Ω	0,25W	

DIODES

6550	4822 130 34197	BZX79-B12
6551	4822 130 30621	1N4148
6552	4822 130 30621	1N4148
6560	4822 130 34197	BZX79-B12
6561	4822 130 34197	BZX79-B12
6562	4822 130 34197	BZX79-B12
6563	4822 130 34197	BZX79-B12
6564	4822 130 31024	BZX79-B18
6565	4822 130 30621	1N4148
6566	4822 130 30621	1N4148
6570	4822 130 34197	BZX79-B12
6571	4822 130 34197	BZX79-B12
6580	4822 130 34197	BZX79-B12
6590	4822 130 31024	BZX79-B18

TRANSISTORS & IC's

7509	5322 130 41983	BC858B	
7510	4822 130 42353	BFS19	
7511	5322 130 41983	BC858B	
7540	5322 130 41982	BC848B	
7550	4822 130 42616	BC818-40	
7560	4822 130 42353	BFS19	
7562	5322 130 41983	BC858B	
7580	5322 130 41982	BC848B	
7590	5322 209 10576	HEF4053BD	
7591	5322 209 10576	HEF4053BD	
7593	5322 130 41982	BC848B	
7594	5322 130 41982	BC848B	
7600	4822 209 73306	VPS IC SDA5642	only for VPS

⚠......Safety component, use only this type

IN/OUT, TELETEXT,VPS MVIO PANEL

CONNECTORS

	4822 265 41295	15 pin
	4822 265 31086	6 pin
	4822 265 51352	Scart

MISCELLANEOUS

1000	4822 242 81099	Crystal 12 MHz
1200	4822 242 81471	Crystal 27 MHz
1300	4822 320 40186	Delay line

CAPACITORS

2001	4822 122 31947	100	nF	63V
2002	5322 122 32658	22	pF	50V
2003	5322 122 32658	22	pF	50V
2004	4822 122 33177	10	nF	50V
2005	5322 122 34123	1	nF	50V
2010	4822 122 31947	100	nF	63V
2020	4822 122 31947	100	nF	63V
2030	4822 122 31947	100	nF	63V
2200	4822 122 31947	100	nF	63V
2201	4822 124 80231	47	µF	16V
2202	4822 122 31797	22	nF	63V
2204	4822 122 31947	100	nF	63V
2206	4822 122 31947	100	nF	63V
2207	5322 122 34123	1	nF	50V
2208	5322 122 32448	10	pF	50V
2209	5322 122 32481	15	pF	50V
2210	4822 122 31947	100	nF	63V
2211	4822 122 31947	100	nF	63V
2250	4822 124 22826	10	µF	16V
2251	5322 122 32654	22	nF	63V
2300	4822 124 22826	10	µF	16V
2301	4822 122 31947	100	nF	63V
2302	4822 122 31947	100	nF	63V
2303	4822 122 32442	10	nF	50V
2304	5322 122 34123	1	nF	50V
2305	4822 122 33177	10	nF	50V
2306	4822 122 31947	100	nF	63V
2307	4822 122 31947	100	nF	63V
2308	5322 122 34123	1	nF	50V
2309	5322 122 33861	120	pF	50V
2310	4822 122 33177	10	nF	50V
2311	5322 122 32661	56	pF	50V
2312	4822 124 80227	2,2	µF	35V
2313	4822 124 80227	2,2	µF	35V
2314	4822 124 80227	2,2	µF	35V
2340	4822 122 31947	100	nF	63V
2350	5322 122 32481	15	pF	50V
2351	4822 122 32442	10	nF	50V
2352	5322 122 34123	1	nF	
2370	4822 124 80231	47	µF	16V
2371	4822 122 32891	68	nF	63V
2372	4822 122 33177	10	nF	50V
2400	4822 122 31947	100	nF	63V
2401	4822 122 31947	100	nF	63V
2402	4822 122 31947	100	nF	63V
2403	4822 122 31947	100	nF	63V
2404	4822 122 31947	100	nF	63V
2405	5322 122 33861	120	pF	50V
2511	4822 124 80535	10	µF	16V
2541	4822 124 22826	10	µF	16V
2561	4822 124 80535	10	µF	16V
2570	5322 122 32268	470	pF	50V
2571	5322 122 32268	470	pF	50V
2580	5322 122 32268	470	pF	50V
2581	4822 124 22826	10	µF	16V
2590	4822 122 33177	10	nF	50V
2591	4822 122 32442	10	nF	50V

RESISTORS

3000	4822 051 20472	4,7	kΩ	0,1W
3001	4822 051 20472	4,7	kΩ	0,1W
3003	4822 051 20472	4,7	kΩ	0,1W
3004	4822 051 20472	4,7	kΩ	0,1W
3010	4822 051 10102	1	kΩ	0,25W
3011	4822 051 20181	180	Ω	0,1W
3200	4822 051 20101	100	Ω	0,1W
3201	4822 051 20101	100	Ω	0,1W
3202	4822 051 20681	680	Ω	0,1W
3203	4822 051 20332	3,3	kΩ	0,1W
3204	4822 051 20151	150	Ω	0,1W
3205	4822 051 20273	27	kΩ	0,1W
3300	4822 051 10822	8,2	kΩ	0,25W
3301	4822 051 20222	2,2	kΩ	0,1W
3302	4822 051 20224	220	kΩ	0,1W
3303	4822 051 10563	56	kΩ	0,25W
3304	4822 051 10102	1	kΩ	0,25W
3305	4822 051 20681	680	Ω	0,1W
3306	4822 051 10102	1	kΩ	0,25W
3307	4822 051 10102	1	kΩ	0,25W
3340	4822 051 20105	1	MΩ	0,1W
3341	4822 051 20332	3,3	kΩ	0,1W
3350	4822 051 20471	470	Ω	0,1W
3351	4822 051 20471	470	Ω	0,1W
3352	4822 051 20221	220	Ω	0,1W
3370	4822 051 20101	100	Ω	0,1W
3371	4822 051 20479	47	Ω	0,1W
3372	4822 051 20271	270	Ω	0,1W
3373	4822 051 20225	2,2	MΩ	0,1W
3374	4822 051 20223	22	kΩ	
3400	4822 051 20103	10	kΩ	0,1W
3401	4822 051 20103	10	kΩ	0,1W
3403	4822 051 20472	4,7	kΩ	
3404	4822 051 20221	220	Ω	0,1W
3405	4822 051 10102	1	kΩ	0,25W
3406	4822 051 10102	1	kΩ	0,25W
3407	4822 051 20122	1,2	kΩ	
3408	4822 051 10102	1	kΩ	0,25W
3409	4822 051 20472	4,7	kΩ	0,1W
3451	4822 051 20472	4,7	kΩ	
3452	4822 051 20472	4,7	kΩ	
3501	4822 051 20222	2,2	kΩ	0,1W
3510	4822 051 10102	1,0	kΩ	
3511	4822 051 20471	470	Ω	
3512	4822 051 20122	1,2	kΩ	
3513	4822 051 20123	12	kΩ	
3514	4822 051 20123	12	kΩ	0,1W
3515	4822 051 20103	10	kΩ	0,1W
3516	4822 051 20471	470	Ω	
3517	4822 051 20471	470	Ω	
3518	4822 051 20229	22	Ω	
3519	4822 051 20101	100	Ω	
3520	4822 051 20101	100	Ω	
3530	4822 051 20109	10	Ω	
3541	4822 051 10104	100	kΩ	0,25W
3542	4822 051 20472	4,7	kΩ	0,1W
3550	4822 051 20829	82	Ω	0,1W
3560	4822 051 20229	22	Ω	
3561	4822 051 10102	1,0	kΩ	
3562	4822 051 20122	1,2	kΩ	
3563	4822 051 20123	12	kΩ	
3564	4822 051 20123	12	kΩ	0,1W
3565	4822 051 20103	10	kΩ	0,1W
3566	4822 051 20471	470	Ω	
3567	4822 051 20101	100	Ω	
3568	4822 051 20101	100	Ω	
3570	4822 051 20682	6,8	kΩ	
3571	4822 051 20682	6,8	kΩ	
3572	4822 051 20224	220	kΩ	0,1W
3580	4822 051 20471	470	Ω	0,1W
3581	4822 051 20104	100	kΩ	0,1W
3582	4822 051 20472	4,7	kΩ	0,1W
3583	4822 051 20224	220	kΩ	0,1W
3590	4822 051 10682	6,8	kΩ	0,25W

⚠......Safety component, use only this type

IN/OUT, TELETEXT,VPS MVIO PANEL

COILS

5000	4822 157 70503	4,7	µH
5010	4822 157 70503	4,7	µH
5020	4822 157 70503	4,7	µH
5030	4822 157 70503	4,7	µH
5200	4822 157 63343		
5201	4822 157 70503	4,7	µH
5250	4822 157 53265	100	µH
5300	4822 157 63343		
5301	4822 157 53252	22	µH
5370	4822 157 70131		
5400	4822 157 63343		

DIODES

6550	4822 130 33699	BZX84-C12
6551	5322 130 34331	BAV70
6560	4822 130 33699	BZX84-C12
6561	5322 130 34331	BAV70
6570	4822 130 33699	BZX84-C12
6571	4822 130 33699	BZX84-C12
6580	4822 130 33699	BZX84-C12
6590	4822 130 33699	BZX84-C12
6592	4822 130 33699	BZX84-C12

TRANSISTORS & IC's

7000	4822 209 32331	SAB 8032 WITH SOCKET
7020	5322 209 31276	PC74HCT573T
7030	4822 209 31553	FCB61C65LL-70T
7200	4822 209 32328	SAA5248GP/E
7250	4822 209 31553	FCB61C65LL-70T
7300	4822 209 71415	MC1377P
7340	5322 130 41982	BC848B
7350	5322 130 41982	BC848B
7351	5322 130 41982	BC848B
7370	5322 130 41982	BC848B
7371	5322 130 41982	BC848B
7372	5322 130 41982	BC848B
7400	4822 209 32327	BA7605N
7401	5322 130 41983	BC858B
7402	4822 130 61495	DTA 124EK
7403	5322 130 41982	BC848B
7404	4822 209 73852	PMBT 2369
7405	5322 130 41983	BC858B
7511	5322 130 41983	BC858B
7512	4822 130 42353	BFS19
7513	5322 130 41983	BC858B
7540	5322 130 41982	BC848B
7561	5322 130 41982	BC848B
7562	4822 130 42353	BFS19
7563	5322 130 41983	BC858B
7580	5322 130 41982	BC848B
7590	5322 209 14481	HEF4053BT
7591	5322 209 14481	HEF4053BT
7595	4822 130 42616	BC818-40

⚠......Safety component, use only this type

IN/OUT, OSD, VPS NIO PANEL

MISCELLANEOUS

4822 265 41295	15 pin

CAPACITORS

2510	4822 126 10002	100	nF	25V	
2511	4822 124 80535	10	µF	16V	
2541	4822 124 22826	10	µF	16V	
2560	4822 126 10002	100	nF	25V	
2561	4822 124 80535	10	µF	16V	
2570	5322 122 32268	470	pF	50V	
2571	5322 122 32268	470	pF	50V	
2580	5322 122 32268	470	pF	50V	
2581	4822 124 22826	10	µF	16V	
2590	4822 126 10002	100	nF	25V	
2591	4822 122 33177	10	nF	50V	
2600	5322 12231946	27	pF	50V	only for VPS
2602	4822 126 10002	100	nF	50V	only for PDC
2603	4822 126 10002	100	nF	50V	only for VPS
2850	4822 124 22826	10	µF	16V	
2851	4822 124 22826	10	µF	16V	
2852	5322 126 10223	4,7	nF	63V	
2853	5322 116 80853	560	pF	63V	
2854	5322 126 10223	4,7	nF	63V	
2855	5322 116 80853	560	pF	63V	
2858	4822 124 22826	10	µF	16V	
2860	4822 126 10002	100	nF	25V	

RESISTORS

3508	4822 051 20471	470	Ω	0,1W	
3509	4822 051 20471	470	Ω	0,1W	
3510	4822 051 10102	1	kΩ	0,25W	
3511	4822 051 20471	470	Ω	0,1W	
3512	4822 051 20122	1,2	kΩ	0,1W	
3513	4822 051 20393	39	kΩ	0,1W	
3514	4822 051 20123	12	kΩ	0,1W	
3515	4822 051 20103	10	kΩ	0,1W	
3516	4822 116 52191	33	Ω	0,5W	
3541	4822 051 20104	100	kΩ	0,1W	
3542	4822 051 20472	4,7	kΩ	0,1W	
3550	4822 051 20829	82	Ω	0,1W	
3551	4822 051 20682	6,8	kΩ	0,1W	
3560	4822 051 10102	1	kΩ	0,25W	
3561	4822 051 20471	470	Ω	0,1W	
3562	4822 051 20122	1,2	kΩ	0,1W	
3563	4822 051 20393	39	kΩ	0,1W	
3564	4822 051 20123	12	kΩ	0,1W	
3565	4822 051 20103	10	kΩ	0,1W	
3566	4822 051 20101	100	Ω	0,1W	
3567	4822 051 20229	22	Ω	0,1W	
3568	4822 051 20101	100	Ω	0,1W	
3570	4822 051 20682	6,8	kΩ	0,1W	
3571	4822 051 20682	6,8	kΩ	0,1W	
3572	4822 051 20224	220	kΩ	0,1W	
3581	4822 051 20104	100	kΩ	0,1W	
3582	4822 051 20472	4,7	kΩ	0,1W	
3583	4822 051 20224	220	kΩ	0,1W	
3584	4822 051 20471	470	Ω	0,1W	
3600	4822 051 20101	100	Ω	0,1W	only for VPS
3601	4822 051 20101	100	Ω	0,1W	only for VPS
3602	4822 051 20332	3,3	kΩ	0,1W	only for VPS
3603	4822 051 20682	6,8	kΩ	0,1W	only for VPS
3604	4822 051 20105	1,0	MΩ	0,1W	only for VPS
3605	4822 051 20562	5,6	kΩ	0,1W	only for PDC
3606	4822 051 20105	1,0	MΩ	0,1W	only for VPS
3607	4822 051 20101	100	Ω	0,1W	only for VPS
3608	4822 051 20104	100	kΩ	0,1W	only for VPS
3609	4822 051 20105	1,0	MΩ	0,1W	only for VPS
3850	4822 051 20153	15	kΩ	0,1W	
3851	4822 051 20103	10	kΩ	0,1W	
3852	4822 051 20103	10	kΩ	0,1W	
3853	4822 051 20103	10	kΩ	0,1W	
3854	4822 051 20153	15	kΩ	0,1W	
3855	4822 051 20103	10	kΩ	0,1W	
3856	4822 051 20222	2,2	kΩ	0,1W	
3857	4822 051 20472	4,7	kΩ	0,1W	
3858	4822 051 20222	2,2	kΩ	0,1W	
3859	4822 051 20008	0	Ω	0,1W	
3860	4822 051 20472	4,7	kΩ	0,1W	
3861	4822 051 20223	22	kΩ	0,1W	
3862	4822 051 20153	15	kΩ	0,1W	
3863	4822 051 20104	100	kΩ	0,1W	
3864	4822 051 20472	4,7	kΩ	0,1W	
3865	4822 051 20472	4,7	kΩ	0,1W	
3866	4822 051 20475	4,7	MΩ	0,1W	
3867	4822 051 20475	4,7	MΩ	0,1W	
3901	4822 051 20008	0	Ω	0,1W	
3905	4822 051 10008	0	Ω	0,25W	
3907	4822 051 10008	0	Ω	0,25W	
3912	4822 051 10008	0	Ω	0,25W	
3915	4822 051 20008	0	Ω	0,1W	
3922	4822 051 10008	0	Ω	0,25W	
3923	4822 051 10008	0	Ω	0,25W	

DIODES

6550	4822 130 34197	BZX79-B12
6551	4822 130 30621	1N4148
6552	4822 130 30621	1N4148
6560	4822 130 34197	BZX79-B12
6564	4822 130 31024	BZX79-B18
6565	5322 130 34331	BAV70
6567	4822 130 30621	1N4148
6570	4822 130 34197	BZX79-B12
6571	4822 130 34197	BZX79-B12
6580	4822 130 34197	BZX79-B12
6590	4822 130 31024	BZX79-B18

TRANSISTORS & IC's

7509	5322 130 41983	BC858B	
7510	4822 130 42353	BSF19-F2	
7511	5322 130 41983	BC858B	
7540	5322 130 41982	BC848B	
7550	4822 130 42616	BC818-40	
7560	4822 130 42353	BSF19-F2	
7562	5322 130 41983	BC858B	
7580	5322 130 41982	BC848B	
7590	5322 209 14481	HEF4053BT	
7591	5322 209 14481	HEF4053BT	
7593	5322 130 41982	BC848B	
7600	4822 209 32728	SDA5642-5	only for VPS
7851	5322 130 41982	BC848B	
7852	5322 130 41982	BC848B	

⚠......Safety component, use only this type

HEAD AMPLIFIERS LHA

4822 214 33714	LHA 2/0
4822 214 33761	LHA 3/0
4822 214 33666	LHA 4/0

NFM PANEL

4822 214 60168	NFM

CABLES

4822 321 61675	Cable chinch	not for N4
4822 320 50318	Cable B6 - L8	only for N4
4822 320 50293	Cable SM1 - F1	not for N4
4822 321 61675	Cable chinch	only for N4
4822 320 50294	Cable DC1 - F6	not for N4
4822 320 50299	Cable L4 - F2	only for N4
4822 320 50319	Cable L6 - 1911	not for N4
4822 320 50293	Cable SM1 - F1	only for N4
4822 320 50321	Cable L1 - 1915	not for N4
4822 320 50297	Cable L2 - F3	
4822 320 50298	Cable L3 - F8	
4822 320 50299	Cable L4 - F2	not for N4
4822 320 50318	Cable B6 - L8	not for N4
4822 320 50342	Cable 1932 - 1912	only for N4
4822 320 50344	Cable L1 - 1915	only for N4
4822 320 50345	Cable L6 - 1911	only for N4
4822 320 50346	Cable 1103 - 1925	only for N4
4822 320 50343	Cable 1105 - 1922	only for N4

⚠......Safety component, use only this type